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**FACT SHEET**

**KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM  
PERMIT TO DISCHARGE TREATED WASTEWATER  
INTO WATERS OF THE COMMONWEALTH**

KPDES No.: KY0104566      Permit Writer: Ronnie Thompson      Date: January 8, 2010  
AI No.: 923

**1. SYNOPSIS OF APPLICATION**

a. Name and Address of Applicant

Kinder Morgan Terminals - Owensboro Gateway  
7550 Terminal Road  
Maceo, Kentucky 42355

b. Facility Location

Kinder Morgan Terminals - Owensboro Gateway  
7550 Terminal Road  
Maceo, Daviess County, Kentucky

c. Description of Applicant's Operation

Kinder Morgan Terminals - Owensboro Gateway is a river barge terminal that receives and stores aluminum ingot and road salt for loading onto trucks (SIC Code 4491).

d. Production Capacity of Facility

N/A

e. Description of Existing Pollution Abatement Facilities

- Outfall 001 - Storm water runoff is treated by sedimentation.
- Outfall 002 - Storm water runoff is treated by sedimentation.
- Outfall 003 - Storm water runoff is untreated.
- Outfall 004 - Storm water runoff is treated by sedimentation.
- Outfall 005 - Storm water runoff is treated by sedimentation.
- Outfall 006 - Storm water runoff is untreated.

**1. SYNOPSIS OF APPLICATION - continued**

f. Permitting Action

This is a reissuance of a minor KPDES permit for an existing river barge terminal.

**2. RECEIVING WATER**

a. Name/Mile Point

Facility discharges from Outfall 001 to the Ohio River at latitude 37-50-39 and longitude 87-02-21.

Facility discharges from Outfall 002 to Kelly Creek at latitude 37-50-27 and longitude 87-02-18.

Facility discharges from Outfall 003 to an unnamed tributary of Kelly Creek at latitude 37-50-45 and longitude 87-02-07.

Facility discharges from Outfall 004 to an unnamed tributary of Kelly Creek at latitude 37-50-49 and longitude 87-02-20.

Facility discharges from Outfall 005 to Kelly Creek at latitude 37-50-35 and longitude 87-02-05.

Facility discharges from Outfall 006 to Kelly Creek at latitude 37-50-41 and longitude 87-02-01.

b. Stream Segment Use Classification

Pursuant to 401 KAR 10:026, Section 5, the Ohio River carries the following classifications: Warmwater Aquatic Habitat, Primary/Secondary Contact Recreation and Domestic Water Supply.

Pursuant to 401 KAR 10:026, Section 5, Kelly Creek carries the following classifications: Warmwater Aquatic Habitat, Primary/Secondary Contact Recreation and Domestic Water Supply.

Pursuant to 401 KAR 10:026, Section 5, the unnamed tributary of Kelly Creek carries the following classifications: Warmwater Aquatic Habitat, Primary/Secondary Contact Recreation and Domestic Water Supply.

c. Stream Segment Categorization

Pursuant to 401 KAR 10:030, Section 1, the Ohio River is categorized as "Impaired Waters".

Pursuant to 401 KAR 10:030, Section 1, Kelly Creek is categorized as "High Quality Waters".

Pursuant to 401 KAR 10:030, Section 1, the unnamed tributary of Kelly Creek is categorized as "High Quality Waters".

d. Stream Low Flow Condition

The 7-day, 10-year low flow and harmonic mean conditions of the Ohio River are 11,000 cfs and 49,000 cfs, respectively.

The 7-day, 10-year low flow and harmonic mean conditions of Kelly Creek are both 0 cfs.

The 7-day, 10-year low flow and harmonic mean conditions of the unnamed tributary of Kelly Creek are both 0 cfs.

### 3. REPORTED DISCHARGE AND PROPOSED LIMITS

Serial Number 001 - Storm water runoff.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (MGD)	0.118	0.346	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(ii)
Total Suspended Solids (mg/l)	224	623	30	60	401 KAR 5:080, Section 2(3) 40 CFR 125.3
Oil & Grease (mg/l)	BDL	7	10	15	401 KAR 5:080, Section 2(3) 40 CFR 125.3
Chloride (mg/l)	212	514	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Iron (mg/l)	5.9	13.2	N/A		401 KAR 10:031, Section 4
Total Recoverable Aluminum (mg/l)	3.88	8.68	Report	Report	401 KAR 5:065, Section 2(3) 40 CFR 122.43(a)
Total Recoverable Manganese (mg/l)	0.19	0.36	Report	Report	401 KAR 5:065, Section 2(3) 40 CFR 122.43(a)
pH (standard units)	8.2	8.9	6.0 (min)	9.0 (max)	401 KAR 10:031, Section 4

The data contained under the reported discharge columns is not from the renewal application, but rather from the analysis of the DMR data that has been reported during the term of the previous permit.

The abbreviation BDL means below detectable limit, N/A means Not Applicable.

4. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 001 - Storm water runoff from 20 acres, none of which is impervious. This outfall contains runoff from the central barge unloading area.

b. Effluent Characteristics

Flow, Total Suspended Solids, Oil & Grease, Chloride, Total Recoverable Iron, Total Recoverable Aluminum, Total Recoverable Manganese and pH

c. Pertinent Factors

A summarization of the effluent requirements, water quality standards, assumptions and calculations can be found in Attachment A - SSTWAM2004 for Kinder Morgan Terminals - Owensboro Gateway.

d. Monitoring Requirements

Flow monitoring shall be conducted once per month instantaneously.

Total Suspended Solids, Oil & Grease, Total Recoverable Iron, Total Recoverable Aluminum and Total Recoverable Manganese shall be monitored once per month by grab sample.

pH shall be monitored once per month by grab sample.

e. Justification of Conditions

The Kentucky regulations cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

Flow

The monitoring requirements for this parameter are consistent with the requirements of 401 KAR 5:065, Section 2(3).

Total Suspended Solids and Oil & Grease

The limits for these parameters are consistent with the requirements of 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). The limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Conventional Pollutant Control Technology" (BCT) requirements for these pollutants.

Chloride

The removal of this parameter from the permit is consistent with 401 KAR 5:080, Section 2(4). The previous permit contained a monitoring requirement but no effluent limitations. Utilizing data from the Discharge Monitoring Reports (DMRs), the Division of Water calculated expected effluent limitations and performed a reasonable potential analysis. The results of this analysis can be found in Attachment A. The reasonable potential analysis performed recommended that no monitoring or limits be applied to this parameter. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that this parameter be removed from the permit.

4. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Conditions - continued

Total Recoverable Iron

The limits for this parameter are consistent with the requirements of 401 KAR 5:031, Section 4. The previous permit contained a monitoring requirement but no effluent limitations. Utilizing data from the Discharge Monitoring Reports (DMRs), the Division of Water calculated expected effluent limitations and performed a reasonable potential analysis. The results of this analysis can be found in Attachment A. Based on these results, effluent limitations are required for this parameter. The limits were developed using SSTWAM2004 water quality modeling. Because the discharge consists of storm water only, the monthly average limitation will not be used.

Total Recoverable Aluminum and Total Recoverable Manganese

The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(3).

pH

The limits for this parameter are consistent with the requirements of 401 KAR 10:031, Section 4.

## 5. REPORTED DISCHARGE AND PROPOSED LIMITS

Serial Number 002 - Storm water runoff.

Effluent Characteristics	Reported Monthly Average	Discharge Daily Maximum	Proposed Monthly Average	Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (MGD)	0.107	0.173	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(ii)
Total Suspended Solids (mg/l)	287	510	30	60	401 KAR 5:080, Section 2(3) 40 CFR 125.3
Oil & Grease (mg/l)	BDL	3	10	15	401 KAR 5:080, Section 2(3) 40 CFR 125.3
Chloride (mg/l)	1814	8560	N/A	1200	401 KAR 10:031, Section 4
Total Recoverable Iron (mg/l)	4.6	7.7	N/A	4.0	401 KAR 10:031, Section 4
Total Recoverable Aluminum (mg/l)	2.40	5.11	Report	Report	401 KAR 5:065, Section 2(3) 40 CFR 122.43(a)
Total Recoverable Manganese (mg/l)	0.18	0.35	Report	Report	401 KAR 5:065, Section 2(3) 40 CFR 122.43(a)
pH (standard units)	7.7	8.8	6.0 (min)	9.0 (max)	401 KAR 10:031, Section 4

The data contained under the reported discharge columns is not from the renewal application, but rather from the analysis of the DMR data that has been reported during the term of the previous permit.

The abbreviation BDL means below detectable limit, N/A means Not Applicable.

6. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 002 - Storm water runoff from 10.9 acres, none of which is impervious. This outfall contains runoff from the salt storage area.

b. Effluent Characteristics

Flow, Total Suspended Solids, Oil & Grease, Chloride, Total Recoverable Iron, Total Recoverable Aluminum, Total Recoverable Manganese and pH

c. Pertinent Factors

A summarization of the effluent requirements, water quality standards, assumptions and calculations can be found in Attachment B - SSTWAM2004 for Kinder Morgan Terminals - Owensboro Gateway.

d. Monitoring Requirements

Flow monitoring shall be conducted once per month instantaneously.

Total Suspended Solids, Oil & Grease, Chloride, Total Recoverable Iron, Total Recoverable Aluminum and Total Recoverable Manganese shall be monitored once per month by grab sample.

pH shall be monitored once per month by grab sample.

e. Justification of Conditions

The Kentucky regulations cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

Flow

The monitoring requirements for this parameter are consistent with the requirements of 401 KAR 5:065, Section 2(8).

Total Suspended Solids and Oil & Grease

The limits for these parameters are consistent with the requirements of 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). The limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Conventional Pollutant Control Technology" (BCT) requirements for these pollutants.

Chloride and Total Recoverable Iron

The limits for these parameters are consistent with the requirements of 401 KAR 5:031, Section 4. The previous permit contained a monitoring requirement but no effluent limitations. Utilizing data from the Discharge Monitoring Reports (DMRs), the Division of Water calculated expected effluent limitations and performed a reasonable potential analysis. The results of this analysis can be found in Attachment B. Based on these results, effluent limitations are required for these parameters. The limits were developed using SSTWAM2004 water quality modeling. Because the discharge consists of storm water only, the monthly average limitations will not be used.

Total Recoverable Aluminum and Total Recoverable Manganese

The monitoring requirements for these parameters are consistent with the requirements of 401 KAR 5:065, Section 2(3).

pH

The limits for this parameter are consistent with the requirements of 401 KAR 10:031, Section 4.

## 7. REPORTED DISCHARGE AND PROPOSED LIMITS

Serial Number 003 - Storm water runoff (Representative of Outfall 004)

Effluent Characteristics	Reported Monthly Average	Discharge Daily Maximum	Proposed Monthly Average	Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (MGD)	0.059	0.173	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(ii)
Total Suspended Solids (mg/l)	48	122	30	60	401 KAR 5:080, Section 2(3) 40 CFR 125.3
Oil & Grease (mg/l)	BDL	BDL	10	15	401 KAR 5:080, Section 2(3) 40 CFR 125.3
Chloride (mg/l)	7	14	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Iron (mg/l)	0.9	2.9	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Arsenic (mg/l)	0.003	0.006	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Copper (mg/l)	0.010	0.023	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Chromium (mg/l)	0.005	0.010	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Lead (mg/l)	0.003	0.006	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Manganese (mg/l)	0.03	0.09	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Hardness (as mg/l CaCO <sub>3</sub> )	173	260	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
pH (standard units)	8.2	8.9	6.0 (min)	9.0 (max)	401 KAR 10:031, Section 4

The data contained under the reported discharge columns is not from the renewal application, but rather from the analysis of the DMR data that has been reported during the term of the previous permit.

The abbreviation BDL means below detectable limit, NR means Not Reported on the DMRs and N/A means Not Applicable.

8. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 003 - Storm water runoff from 5.3 acres, none of which is impervious.

b. Effluent Characteristics

Flow, Total Suspended Solids, Oil & Grease, Chloride, Total Recoverable Iron, Total Recoverable Arsenic, Total Recoverable Copper, Total Recoverable Chromium, Total Recoverable Lead, Total Recoverable Manganese, Hardness and pH

c. Pertinent Factors

A summarization of the effluent requirements, water quality standards, assumptions and calculations can be found in Attachment C - SSTWAM2004 for Kinder Morgan Terminals - Owensboro Gateway.

Outfall 003 is representative of a substantially identical outfall. Outfall 003 will be sampled in accordance with the monitoring requirements of this permit and the results will be reported for Outfall 004.

d. Monitoring Requirements

Flow monitoring shall be conducted once per month instantaneously.

Total Suspended Solids and Oil & Grease shall be monitored once per month by grab sample.

pH shall be monitored once per month by grab sample.

e. Justification of Conditions

The Kentucky regulations cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

Flow  
The monitoring requirements for this parameter are consistent with the requirements of 401 KAR 5:065, Section 2(8).

Total Suspended Solids and Oil & Grease

The limits for these parameters are consistent with the requirements of 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). The limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Conventional Pollutant Control Technology" (BCT) requirements for these pollutants.

Chloride

The removal of this parameter from the permit is consistent with 401 KAR 5:080, Section 2(3). The previous permit contained a monitoring requirement but no effluent limitations. Utilizing data from the Discharge Monitoring Reports (DMRs), the Division of Water calculated expected effluent limitations and performed a reasonable potential analysis. The results of this analysis can be found in Attachment C. The reasonable potential analysis performed recommended that no monitoring or limits be applied to this parameter. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that this parameter be removed from the permit.

8. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Conditions - continued

Total Recoverable Iron

The removal of this parameter from the permit is consistent with 401 KAR 5:080, Section 2(3). The previous permit contained a monitoring requirement but no effluent limitations. Utilizing data from the Discharge Monitoring Reports (DMRs), the Division of Water calculated expected effluent limitations and performed a reasonable potential analysis. The results of this analysis can be found in Attachment C. The reasonable potential analysis performed recommended monthly average monitoring for this parameter. Because the discharge consists of storm water only, monthly average monitoring will not be required. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that this parameter be removed from the permit.

Total Recoverable Arsenic, Total Recoverable Copper, Total Recoverable Chromium and Total Recoverable Lead

The removal of these parameters from the permit is consistent with 401 KAR 5:080, Section 2(3). The previous permit contained a monitoring requirement but no effluent limitations. Utilizing data from the Discharge Monitoring Reports (DMRs), the Division of Water calculated expected effluent limitations and performed a reasonable potential analysis. The results of this analysis can be found in Attachment C. Because less than 12 samples were collected, the reasonable potential analysis recommended that monitoring be applied to these parameters. A comparison of the DMR data to the SSTWAM2004 calculated effluent limitations revealed the DMR data to be less than 70% of the calculated effluent limitations. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

Total Recoverable Manganese and Hardness

The removal of these parameters from the permit is consistent with 401 KAR 5:080, Section 2(3). A review of the DMR data for the previous permit indicated that reasonable potential did not exist for these parameters to be limited or monitored in the permit. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

pH

The limits for this parameter are consistent with the requirements of 401 KAR 10:031, Section 4.

## 9. REPORTED DISCHARGE AND PROPOSED LIMITS

Serial Number 004 - Storm water runoff.

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (MGD)	0.035	0.035	Report	Report	401 KAR 5:065, Section 2(4) 40 CFR 122.44(i)(1)(ii)
Total Suspended Solids (mg/l)	67	67	30	60	401 KAR 5:080, Section 2(3) 40 CFR 125.3
Oil & Grease (mg/l)	BDL	BDL	10	15	401 KAR 5:080, Section 2(3) 40 CFR 125.3
Chloride (mg/l)	34	34	Removing from permit	Removing from permit	401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Iron (mg/l)	2.3	2.3	Removing from permit	Removing from permit	401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Aluminum (mg/l)	NR	NR	Removing from permit	Removing from permit	401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Arsenic (mg/l)	0.004	0.004	Removing from permit	Removing from permit	401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Copper (mg/l)	0.010	0.010	Removing from permit	Removing from permit	401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Chromium (mg/l)	0.005	0.005	Removing from permit	Removing from permit	401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Lead (mg/l)	0.004	0.004	Removing from permit	Removing from permit	401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Manganese (mg/l)	0.07	0.07	Removing from permit	Removing from permit	401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Hardness (as mg/l CaCO <sub>3</sub> )	94	94	Removing from permit	Removing from permit	401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
pH (standard units)	8.0	8.0	6.0 (min)	9.0 (max)	401 KAR 10:031, Section 4

The data contained under the reported discharge columns is not from the renewal application, but rather from the analysis of the DMR data that has been reported during the term of the previous permit.  
 The abbreviation BDL means below detectable limit, NR means not reported on the DMRs and N/A means Not Applicable.

10. METHODOLOGY USED IN DETERMINING LIMITATIONS

a. Serial Number

Outfall 004 - Storm water runoff from 11 acres, none of which is impervious.

b. Effluent Characteristics

Flow, Total Suspended Solids, Oil & Grease, Chloride, Total Recoverable Iron, Total Recoverable Aluminum, Total Recoverable Arsenic, Total Recoverable Copper, Total Recoverable Chromium, Total Recoverable Lead, Total Recoverable Manganese, Hardness and pH

c. Pertinent Factors

A summarization of the effluent requirements, water quality standards, assumptions and calculations can be found in Attachment D - SSTWAM2004 for Kinder Morgan Terminals - Owensboro Gateway.

Outfall 004 is substantially identical to Outfall 003. Outfall 003 will be sampled in accordance with the requirements of this permit and the results will be reported for Outfall 004.

d. Monitoring Requirements

Flow monitoring shall be conducted once per month instantaneously.

Total Suspended Solids and Oil & Grease shall be monitored once per month by grab sample.

pH shall be monitored once per month by grab sample.

e. Justification of Conditions

The Kentucky regulations cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

Flow  
The monitoring requirements for this parameter are consistent with the requirements of 401 KAR 5:065, Section 2(8).

Total Suspended Solids and Oil & Grease

The limits for these parameters are consistent with the requirements of 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). The limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Conventional Pollutant Control Technology" (BCT) requirements for these pollutants.

Chloride, Total Recoverable Arsenic and Total Recoverable Chromium

The removal of these parameters from the permit is consistent with 401 KAR 5:080, Section 2(3). The previous permit contained a monitoring requirement but no effluent limitations. Utilizing data from the Discharge Monitoring Reports (DMRs), the Division of Water calculated expected effluent limitations and performed a reasonable potential analysis. The results of this analysis can be found in Attachment D. Because less than 12 samples were collected, the reasonable potential analysis recommended that monitoring be applied to these parameters. A comparison of the DMR data to the SSTWAM2004 calculated effluent limitations revealed the DMR data to be less than 70% of the calculated effluent limitations. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

10. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Conditions - continued

Total Recoverable Iron and Total Recoverable Lead

The removal of these parameters from the permit is consistent with 401 KAR 5:080, Section 2(3). The previous permit contained a monitoring requirement but no effluent limitations. Utilizing data from the Discharge Monitoring Reports (DMRs), the Division of Water calculated expected effluent limitations and performed a reasonable potential analysis. The results of this analysis can be found in Attachment D. The reasonable potential analysis performed recommended a monthly average effluent limitation for these parameters. Because the discharge consists of storm water only, the monthly average limitation will not be used. Because less than 12 samples were collected, the reasonable potential analysis recommended that monitoring be applied to these parameters. A comparison of the DMR data to the SSTWAM2004 calculated effluent limitations revealed the DMR data to be less than 70% of the calculated effluent limitations. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

Total Recoverable Aluminum and Total Recoverable Copper

The removal of these parameters from the permit is consistent with 401 KAR 5:080, Section 2(3). Reasonable potential does not exist for these parameters to be limited or monitored in the permit. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

Total Recoverable Manganese and Hardness

The removal of these parameters from the permit is consistent with 401 KAR 5:080, Section 2(3). A review of the DMR data for the previous permit indicated that reasonable potential did not exist for these parameters to be limited or monitored in the permit. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that these parameters be removed from the permit.

pH

The limits for this parameter are consistent with the requirements of 401 KAR 10:031, Section 4.

## 11. REPORTED DISCHARGE AND PROPOSED LIMITS

Serial Number 005 - Storm water runoff (Representative of Outfall 006)

Effluent Characteristics	Reported Discharge Monthly Average	Reported Discharge Daily Maximum	Proposed Limits Monthly Average	Proposed Limits Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (MGD)	0.131	0.670	Report	Report	401 KAR 5:065, Section 2(8)
Total Suspended Solids (mg/l)	165	597	30	60	401 KAR 5:080, Section 2(3)
Oil & Grease (mg/l)	BDL	5	10	15	401 KAR 5:080, Section 2(3)
Chloride (mg/l)	49	314	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Iron (mg/l)	1.9	7.5	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Aluminum (mg/l)	NR	NR	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
Total Recoverable Manganese (mg/l)	0.07	0.26	Removing from permit		401 KAR 5:065, Section 2(4) 40 CFR 122.44(d)
pH (standard units)	7.9	8.9	6.0 (min)	9.0 (max)	401 KAR 10:031, Section 4

The data contained under the reported discharge columns is not from the renewal application, but rather from the analysis of the DMR data that has been reported during the term of the previous permit.

The abbreviation BDL means below detectable limit, NR means not reported on the DMRs.

**12. METHODOLOGY USED IN DETERMINING LIMITATIONS**

a. Serial Number

Outfall 005 - Storm water runoff from 14.3 acres, none of which is impervious.

b. Effluent Characteristics

Flow, Total Suspended Solids, Oil & Grease, Chloride, Total Recoverable Iron, Total Recoverable Aluminum, Total Recoverable Manganese and pH

c. Pertinent Factors

A summarization of the effluent requirements, water quality standards, assumptions and calculations can be found in Attachment E - SSTWAM2004 for Kinder Morgan Terminals - Owensboro Gateway.

Outfall 005 is representative of a substantially identical outfall. Outfall 005 will be sampled in accordance with the monitoring requirements of this permit and the results will be reported for Outfall 006.

d. Monitoring Requirements

Flow monitoring shall be conducted once per month instantaneously.

Total Suspended Solids and Oil & Grease shall be monitored once per month by grab sample.

pH shall be monitored once per month by grab sample.

e. Justification of Conditions

The Kentucky regulations cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

Flow  
The monitoring requirements for this parameter are consistent with the requirements of 401 KAR 5:065, Section 2(8).

Total Suspended Solids and Oil & Grease

The limits for these parameters are consistent with the requirements of 401 KAR 5:080, Section 1(2)(c)2. The limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Conventional Pollutant Control Technology" (BCT) requirements for these pollutants.

Chloride

The removal of this parameter from the permit is consistent with 401 KAR 5:080, Section 2(3). The previous permit contained a monitoring requirement but no effluent limitations. Utilizing data from the Discharge Monitoring Reports (DMRs), the Division of Water calculated expected effluent limitations and performed a reasonable potential analysis. The results of this analysis can be found in Attachment A. The reasonable potential analysis performed recommended that no monitoring or limits be applied to this parameter. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that this parameter be removed from the permit.

12. METHODOLOGY USED IN DETERMINING LIMITATIONS - continued

e. Justification of Conditions - continued

Total Recoverable Iron

The removal of this parameter from the permit is consistent with 401 KAR 5:080, Section 2(3). The previous permit contained a monitoring requirement but no effluent limitations. Utilizing data from the Discharge Monitoring Reports (DMRs), the Division of Water calculated expected effluent limitations and performed a reasonable potential analysis. The results of this analysis can be found in Attachment C. The reasonable potential analysis performed recommended a monthly average effluent limitation for this parameter. Because the discharge consists of storm water only, the monthly average limitation will not be used. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that this parameter be removed from the permit.

Total Recoverable Aluminum

The removal of this parameter from the permit is consistent with 401 KAR 5:080, Section 2(3). Reasonable potential does not exist for this parameter to be limited or monitored in the permit. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that this parameter be removed from the permit.

Total Recoverable Manganese

The removal of this parameter from the permit is consistent with 401 KAR 5:080, Section 2(3). A review of the DMR data for the previous permit indicated that reasonable potential did not exist for this parameter to be limited or monitored in the permit. Therefore, it is the "Best Professional Judgment" (BPJ) of the Division of Water that this parameter be removed from the permit.

pH

The limits for this parameter are consistent with the requirements of 401 KAR 10:031, Section 4.

### 13. REPORTED DISCHARGE AND PROPOSED LIMITS

Serial Number 006 - Storm water runoff.

Effluent Characteristics	Reported Discharge Monthly Average	Daily Maximum	Proposed Limits Monthly Average	Daily Maximum	Applicable Water Quality Criteria and/or Effluent Guidelines
Flow (MGD)	NA	NA	Report	Report	401 KAR 5:065, Section 2(8)
Total Suspended Solids (mg/l)	NA	NA	30	60	401 KAR 5:080, Section 1(2)(c)2
Oil & Grease (mg/l)	NA	NA	10	15	401 KAR 5:080, Section 1(2)(c)2
pH (standard units)	NA	NA	6.0 (min)	9.0 (max)	401 KAR 10:031, Section 4

Because this is a new outfall, DMR data for the reported discharge columns is not available. Likewise, no discharge data is contained in the application.

The abbreviation NA means Not Available and N/A means Not Applicable.

**14. METHODOLOGY USED IN DETERMINING LIMITATIONS**

a. Serial Number

Outfall 006 - Storm water runoff from 14.3 acres, none of which is impervious.

b. Effluent Characteristics

Flow, Total Suspended Solids, Oil & Grease and pH

c. Pertinent Factors

Outfall 006 is substantially identical to Outfall 005. Outfall 005 will be sampled in accordance with the requirements of this permit and the results will be reported for Outfall 006.

d. Monitoring Requirements

Flow monitoring shall be conducted once per month instantaneously.

Total Suspended Solids and Oil & Grease shall be monitored once per month by grab sample.

pH shall be monitored once per month by grab sample.

e. Justification of Conditions

The Kentucky regulations cited below have been duly promulgated pursuant to the requirements of Chapter 224 of the Kentucky Revised Statutes.

Flow

The monitoring requirements for this parameter are consistent with the requirements of 401 KAR 5:065, Section 2(8).

Total Suspended Solids and Oil & Grease

The limits for these parameters are consistent with the requirements of 40 CFR 125.3(c)(2) as incorporated by reference in 401 KAR 5:080, Section 2(3). The limits are representative of the Division of Water's "Best Professional Judgment" (BPJ) determination of the "Best Conventional Pollutant Control Technology" (BCT) requirements for these pollutants.

pH

The limits for this parameter are consistent with the requirements of 401 KAR 10:031, Section 4.

**15. ANTIDEGRADATION**

The conditions of 401 KAR 10:029, Section 1 have been satisfied by this permit action. Since this permit action involves reissuance of an existing permit, and does not propose an expanded discharge, a review under 401 KAR 10:030 Section 1 is not applicable.

**16. PROPOSED COMPLIANCE SCHEDULE FOR ATTAINING EFFLUENT LIMITATIONS**

The permittee will comply with all effluent limitations by the effective date of the permit.

**17. PROPOSED SPECIAL CONDITIONS WHICH WILL HAVE A SIGNIFICANT IMPACT ON THE DISCHARGE**

**Best Management Practices (BMP) Plan**

Pursuant to 401 KAR 5:065, Section 2(4), a BMP requirement shall be included: to control or abate the discharge of pollutants from ancillary areas containing toxic or hazardous substances or those substances which could result in an environmental emergency; where numeric effluent limitations are infeasible; or to carry out the purposes and intent of KRS 224. The facility has several areas where support activities occur which have a potential of the discharge of such substances through storm water runoff or spillage. Some of these areas will drain to present wastewater treatment plants, others will not.

**Outfall Signage**

The permittee shall post a permanent marker at all discharge locations and/or monitoring points. The marker shall be of sufficient size to display the Permittee Name, KPDES permit and outfall numbers and shall be prominently displayed. For internal monitoring points the marker shall be of sufficient size to include the outfall number and is to be posted as near as possible to the actual sampling location.

**18. PERMIT DURATION**

Five (5) years. This facility is in the Tradewater/Green Basin Management Unit as per the Kentucky Watershed Management Framework.

**19. PERMIT INFORMATION**

The application, draft permit, fact sheet, public notice, comments received and additional information is available from the Division of Water at 200 Fair Oaks Lane, Frankfort, Kentucky 40601.

**20. REFERENCES AND CITED DOCUMENTS**

All material and documents referenced or cited in this fact sheet are a part of the permit information as described above and are readily available at the Division of Water Central Office. Information regarding these materials may be obtained from the person listed below.

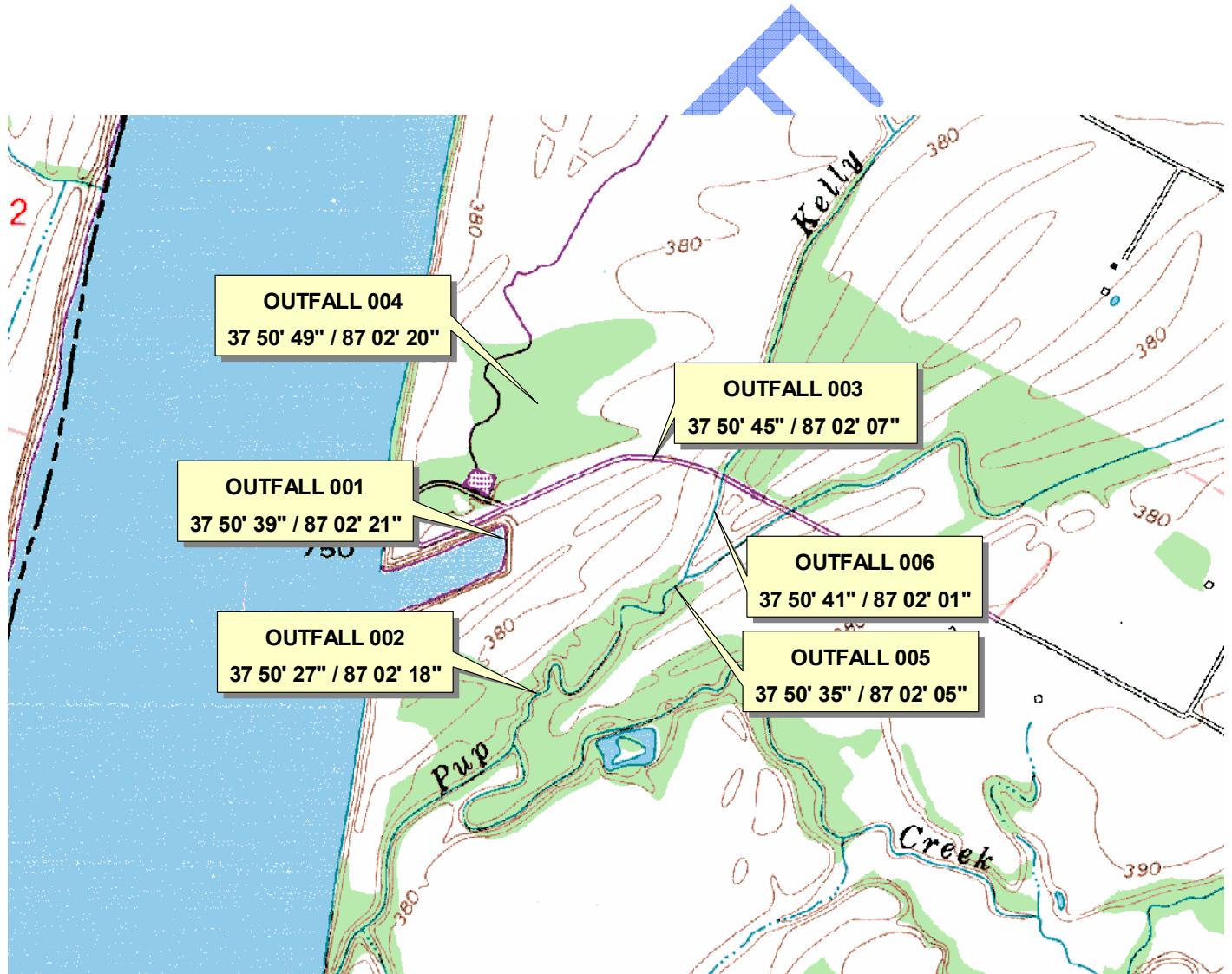
**21. CONTACT**

For further information on the draft permit or comment process, contact the individual identified on the Public Notice or the Permit Writer - Ronnie Thompson at (502) 564-8158, extension 4896, or email [Ronnie.Thompson@ky.gov](mailto:Ronnie.Thompson@ky.gov).

**22. PUBLIC NOTICE INFORMATION**

Please refer to the attached Public Notice for details regarding the procedures for a final decision, deadline for comments and other information required by 401 KAR 5:075, Section 4(2)(e).

## Kinder Morgan Terminals - Owensboro Gateway



## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001

Permit Writer  
 Date Entered  
 Facility Name  
 KPDES Number  
 Outfall Number  
 Case

Status:

Is this an existing facility – Enter “E”

Is this an existing facility with an increase in pollutant load – Enter “I”

Is this a new facility – Enter “N”

Is this a regional facility with an approved up-to-date 201 plan – Enter “R”

Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter “A”

Receiving Water Name

Discharge Mile Point

Public Water Supply Name

Intake Water Name

Intake Mile Point

Total Effluent Flow ( $Q_T$ )

Receiving Water 7Q10 ( $Q_{RW7Q10}$ )

Receiving Water Harmonic Mean ( $Q_{RWHM}$ )

Receiving Water pH

Receiving Water Temperature

Intake Water 7Q10 ( $Q_{IW7Q10}$ )

Intake Water Harmonic Mean ( $Q_{IWHM}$ )

Effluent Hardness

Receiving Water Hardness

Zone of Initial Dilution (ZID)

Mixing Zone (MZ)

Acute to Chronic Ratio (ACR)

Impaired

Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014

Ronnie Thompson  
 1/8/2010  
 Kinder Morgan  
 KY0104566  
 001  
 Reissuance

E	Ohio River
231.3	Henderson Water Utility
179.1	Ohio River
0.118	MGD
11000	cfs
49000	cfs
7.5	SU
20.00	°C
12900	cfs
60900	cfs
100	(as mg/l CaCO <sub>3</sub> )
130	(as mg/l CaCO <sub>3</sub> )
1	
0	
0.1	
No	
No	

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001

### Definitions

Acute to Chronic Ratio  
 Aquatic Life Acute Criteria  
 Aquatic Life Chronic Criteria  
 Human Health Criteria - Fish Only  
 Human Health Criteria - Fish & Water  
 End of Pipe Effluent Limit  
 Instream Background Concentration  
 Toxicity Units - Acute  
 Effluent Hardness

ACR  
 $C_A$   
 $C_C$   
 $C_{HHFO}$   
 $C_{HHFW}$   
 $C_T$   
 $C_U$   
 $TU_a$   
 $H_T$

Total Effluent Flow  
 Receiving Water 7Q10  
 Receiving Water Harmonic Mean  
 Intake Water 7Q10  
 Intake Water Harmonic Mean  
 Zone of Initial Dilution  
 Mixing Zone  
 Toxicity Units - Chronic  
 Receiving Water Hardness

$Q_T$   
 $Q_{RW7Q10}$   
 $Q_{RWHM}$   
 $Q_{IW7Q10}$   
 $Q_{IWHM}$   
 ZID  
 MZ  
 $TU_c$   
 $H_{RW}$

### Aquatic Life - Chemical Specific

#### Acute

NO ZID given  $C_T = C_A$   
 ZID given  $C_T = (C_A - C_U) \times (ZID)$

### Human Health - Chemical Specific

#### Fish Only: Mixing Zone / Complete Mix

Carcinogen / Non-Carcinogen  
 $C_T = \{C_{HHFO}[Q_T + (MZ)(Q_{RWHM})] - [C_U(MZ)(Q_{RWHM})]\}/Q_T$

#### Fish & Water Only: Mixing Zone / Applicable at point of withdrawal

Carcinogen  
 Non-Carcinogen  
 $C_T = \{C_{HHFW}[Q_T + (Q_{IWHM})] - [C_U(Q_{IWHM})]\}/Q_T$   
 $C_T = \{C_{HHFW}[Q_T + (Q_{IW7Q10})] - [C_U(Q_{IW7Q10})]\}/Q_T$

### Aquatic Life - Whole Effluent Toxicity

#### Acute (Units $TU_a$ )

NO ZID given  $C_T = CA$   
 ZID given  $C_T = (C_A - C_U) \times (ZID)$

#### Chronic Mixing Zone / Complete Mix (Units $TU_c$ )

$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$   
 Conversion of  $TU_c$  to  $TU_a$ :  $TU_c \times ACR = TU_a$

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001

### Metal Aquatic Criteria

#### Pollutant

Total Recoverable Cadmium  
 Chromium III  
 Total Recoverable Copper  
 Total Recoverable Lead  
 Total Recoverable Nickel  
 Total Recoverable Silver  
 Total Recoverable Zinc

#### Acute Criteria

$$\begin{aligned} &e^{(1.0166 (\ln \text{Hardness}) - 3.924)} \\ &e^{(0.8190 (\ln \text{Hardness}) + 3.7256)} \\ &e^{(0.9422 (\ln \text{Hardness}) - 1.700)} \\ &e^{(1.273 (\ln \text{Hardness}) - 1.460)} \\ &e^{(0.8460 (\ln \text{Hardness}) + 2.255)} \\ &e^{(1.72 (\ln \text{Hardness}) - 6.59)} \\ &e^{(0.8473 (\ln \text{Hardness}) + 0.884)} \end{aligned}$$

#### Chronic Criteria

$$\begin{aligned} &e^{(0.7409 (\ln \text{Hardness}) - 4.719)} \\ &e^{(0.8190 (\ln \text{Hardness}) + 0.6848)} \\ &e^{(0.8545 (\ln \text{Hardness}) - 1.702)} \\ &e^{(1.273 (\ln \text{Hardness}) - 4.705)} \\ &e^{(0.8460 (\ln \text{Hardness}) + 0.0584)} \\ &e^{(0.8473 (\ln \text{Hardness}) + 0.884)} \end{aligned}$$

### Hardness (as mg/l CaCO<sub>3</sub>)

Zone Initial Dilution (ZID)  
 Mixing Zone

$$H_{RW} + [H_T + H_{RW}] / ZID$$

$$[(Q_{RW7Q10})(MZ)(H_{RW}) + (Q_T)(H_T)] / [(QRW7Q10)(MZ) + (QT)]$$

T = Temperature

### Total Ammonia Criteria

Chronic - applies state wide - unionized criteria of 0.05 mg/l  
 °C

Acute - applies to the Ohio River (ORSANCO Criteria)

$$[0.05 * (1 + 10^{(pKa - pH)})] / 1.2$$

$$[0.411 / (1 + 10^{(7.204 - pH)})] + [58.4 / (1 + 10^{(pH - 7.204)})]$$

### Bioaccumulative or Persistent

For new facilities after September 8, 2004 mixing zones shall not be granted for bioaccumulative or persistent pollutants of concern.

Mixing zones for bioaccumulative or persistent pollutants of concern assigned prior to September 8, 2004 shall expire no later than September 8, 2014, unless the permittee agrees to expiration of the mixing zone prior to that date.

Therefore, the application of the more stringent criteria of Human Health Fish & Water Consumption, Human Health Fish Only Consumption, and Aquatic Life Chronic shall apply as end-of-pipe effluent limitations.

### Antidegradation

If a new facility or an existing facility that will have a pollutant load increase, the effluent limits are halved unless the receiving stream is impaired or the permittee has demonstrated a negative socioeconomic or cost benefit analysis.

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001

### Reasonable Potential Analysis

In establishing water quality based effluent conditions the Division of Water must determine if the pollutant concentrations in the discharge will cause, have the reasonable potential to cause, or contribute to an excursion of any water standard. The process by which the Division of Water makes this determination is known as a Reasonable Potential Analysis.

A Reasonable Potential Analysis is performed by first calculating the expected effluent limitations for those pollutants with water quality criteria. The calculated limits are then compared to the concentrations reported on the KPDES permit application and/or a summarization of the values reported on the Discharge Monitoring Report (DMRs) submitted during the term of the permit. This comparison is made by dividing the reported value by the calculated effluent limitation and converting to a percentage. The following criteria are used in determining how the pollutant will be addressed in the permit.

### New Permits or New Pollutants on Permit Renewals

If the reported concentration is less than 70% of the calculated effluent limit then no monitoring or limitations will be required.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is less than 12 then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is equal or greater than 12 then an effluent limitation will be required.

### Permit Renewals - Existing Pollutants

If the reported concentration is less than 70% of the calculated effluent limit then and the source of the reported concentration was the DMRs for that facility and there were more than 12 DMRs utilized to determine the reported concentrations then the pollutant will be removed from the permit.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% then an effluent limitation will be required.

In all cases, the Division of Water still may exercise its Best Professional Judgment in the implementation of the results.

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Chloride	16887006	212.000000	212.000000	600.000000	1,200.000000	35.33%	17.67%	DMR	26	Remove	Remove	Chronic	Acute
Total Residual Chlorine		0.000000	0.000000	0.011000	0.019000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Color		0.000000	0.000000	5,296.727542	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Fluoride		0.000000	0.000000	141,246.067797	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Nitrate-Nitrite (as N)	14797558	0.000000	0.000000	706,230.338983	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Alpha		0.000000	0.000000	NA	15.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Beta		0.000000	0.000000	NA	50.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Radium		0.000000	0.000000	NA	5.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Sulfate (as SO4)		0.000000	0.000000	17,655,758.474576	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Surfactants		0.000000	0.000000	35,311.516949	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Barium	7440393	0.000000	0.000000	70,623.033898	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Iron	7439896	5.900000	5.900000	1.000000	4.000000	590.00%	147.50%	DMR	26	Limit	Limit	Chronic	Acute
Total Recoverable Antimony	7440360	0.000000	0.000000	0.640000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Arsenic	7440382	0.000000	0.000000	0.150000	0.340000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Beryllium	7440417	0.000000	0.000000	282.492136	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Cadmium	7440439	0.000000	0.000000	0.000271	0.002133	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Chromium	7440439	0.000000	0.000000	7,062.303390	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Copper	7440508	0.000000	0.000000	0.009329	0.013999	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Lead	7439921	0.000000	0.000000	0.003182	0.081645	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Mercury	7439976	0.000000	0.000000	0.000051	0.001700	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Total Recoverable Nickel	7440020	0.000000	0.000000	0.052163	0.469174	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Selenium	7782492	0.000000	0.000000	0.005000	0.020000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Silver	7440224	0.000000	0.000000	NA	0.003784	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Recoverable Thallium	7440280	0.000000	0.000000	0.006300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Zinc	7440666	0.000000	0.000000	0.119816	0.119816	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Free Cyanide	57125	0.000000	0.000000	0.005200	0.022000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrolein	107028	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrylonitrile	107131	0.000000	0.000000	0.000250	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzene	71432	0.000000	0.000000	0.051000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bromoform	75252	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Carbon Tetrachloride	56235	0.000000	0.000000	0.001600	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorobenzene	108907	0.000000	0.000000	21.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorodibromomethane	124481	0.000000	0.000000	0.013000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloroform	67663	0.000000	0.000000	0.470000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dichlorodibromomethane	75274	0.000000	0.000000	0.017000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloroethane	107062	0.000000	0.000000	0.037000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1-Dichloroethylene	75354	0.000000	0.000000	0.003200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloropropane	78875	0.000000	0.000000	0.015000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichloropropene	542756	0.000000	0.000000	1.700000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Ethylbenzene	100414	0.000000	0.000000	29.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Methyl Bromide	74839	0.000000	0.000000	1.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Methylene Chloride	75092	0.000000	0.000000	0.590000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,2,2-Tetrachloroethane	79345	0.000000	0.000000	0.004000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Tetrachloroethylene	127184	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Toluene	108883	0.000000	0.000000	200.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Trans-Dichloroethylene	156605	0.000000	0.000000	140.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,1-Trichloroethane	71556	0.000000	0.000000	14,124.606780	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
1,1,2-Trichloroethane	79005	0.000000	0.000000	0.016000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Trichloroethylene	79016	0.000000	0.000000	0.030000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Vinyl Chloride	75014	0.000000	0.000000	0.530000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chlorophenol	95578	0.000000	0.000000	0.150000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dichlorophenol	120832	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dimethylphenol	105679	0.000000	0.000000	0.850000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrophenol	51285	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pentachlorophenol	87865	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phenol	108952	0.000000	0.000000	1,700.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4,6-Trichlorophenol	88062	0.000000	0.000000	0.002400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acenaphthene	83329	0.000000	0.000000	0.990000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Anthracene	120127	0.000000	0.000000	40.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzidine	92875	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)anthracene	56553	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)pyrene	50328	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(k)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroisopropyl)ether	108601	0.000000	0.000000	65.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-ethylhexyl)phthalate	117817	0.000000	0.000000	0.002200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Butylbenzyl phthalate	85687	0.000000	0.000000	1.900000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chloronaphthalene	91587	0.000000	0.000000	1.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chrysene	218019	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dibenzo(a,h)anthracene	53703	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichlorobenzene	95501	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichlorobenzene	541731	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,4-Dichlorobenzene	106467	0.000000	0.000000	2.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
3,3-Dichlorobenzidine	91941	0.000000	0.000000	0.000028	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Diethyl phthalate	84662	0.000000	0.000000	44.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dimethyl phthalate	131113	0.000000	0.000000	1,100.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Di-n-butyl phthalate	84742	0.000000	0.000000	4.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrotoluene	121142	0.000000	0.000000	0.003400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Diphenylhydrazine	122667	0.000000	0.000000	0.000200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluoranthene	206440	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluorene	86737	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobenzene	118741	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobutadiene	87683	0.000000	0.000000	0.018000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorocyclopentadiene	77474	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Hexachloroethane	67721	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Indeno(1,2,3-cd)pyrene	193395	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Isophorone	78591	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Nitrobenzene	98953	0.000000	0.000000	0.690000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodimethylamine	62759	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodi-n-Propylamine	621647	0.000000	0.000000	0.000510	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodiphenylamine	86306	0.000000	0.000000	0.006000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pyrene	129000	0.000000	0.000000	4.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2,4-Trichlorobenzene	120821	0.000000	0.000000	0.940000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Aldrin	309002	0.000000	0.000000	0.000000	0.003000	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
alpha-BHC	319846	0.000000	0.000000	0.000005	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Beta-BHC	319857	0.000000	0.000000	0.000017	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
gamma-BHC (Lindane)	58899	0.000000	0.000000	0.000063	0.000950	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Chlordane	57749	0.000000	0.000000	0.000001	0.002400	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDT	50293	0.000000	0.000000	0.000000	0.001100	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDE	72559	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
4,4'-DDD	72548	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dieldrin	60571	0.000000	0.000000	0.000000	0.000240	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Alpha-Endosulfan	959988	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Beta-Endosulfan	33213659	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endosulfan sulfate	1031078	0.000000	0.000000	0.089000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Endrin	72208	0.000000	0.000000	0.000036	0.000086	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endrin aldehyde	7421934	0.000000	0.000000	0.000300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Heptachlor	76448	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Heptachlor epoxide	1024573	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Polychlorinated Biphenyls (PCBs)	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA	
Toxaphene	8001352	0.000000	0.000000	0.000000	0.000730	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
1,2,4,5-Tetrachlorobenzene	95943	0.000000	0.000000	0.001100	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-methyl-4,6-dinitrophenol	534521	0.000000	0.000000	0.280000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-D	94757	0.000000	0.000000	23,338.188644	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-TP (Silvex)	93721	0.000000	0.000000	706.230339	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-trichlorophenol	95954	0.000000	0.000000	3.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Asbestos	1332214	0.000000	0.000000	2,333,923,864.406	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Benzo(b)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroethyl)ether	111444	0.000000	0.000000	0.000530	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(chloromethyl)ether	542881	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloropyrifos	2921882	0.000000	0.000000	0.000041	0.000083	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (III)	16065831	0.000000	0.000000	0.086180	1.803049	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (VI)	18540299	0.000000	0.000000	0.011000	0.016000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Demeton	8065483	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Dinitrophenols	25550587	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Guthion	86500	0.000000	0.000000	0.000010	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 001**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Hexachlorocyclo-hexane-Technical	319868	0.000000	0.000000	0.000041	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hydrogen Sulfide, Undissociated	7783064	0.000000	0.000000	0.002000	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Malathion	121755	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Methoxychlor	72435	0.000000	0.000000	0.000030	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Mirex	2385855	0.000000	0.000000	0.000001	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Nitrosamines, Other		0.000000	0.000000	0.001240	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodibutylamine	924163	0.000000	0.000000	0.000220	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodiethylamine	55185	0.000000	0.000000	0.001240	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosopyrrolidine	930552	0.000000	0.000000	0.034000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Parathion	56382	0.000000	0.000000	0.000013	0.000065	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Pentachlorobenzene	608935	0.000000	0.000000	0.001500	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phthalate esters		0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Total Dissolved Solids		0.000000	0.000000	52,967,275.423729	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Tritium		0.000000	0.000000	NA	0	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Strontium-90		0.000000	0.000000	NA	8.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Uranium		0.000000	0.000000	NA	0.030000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Ammonia		0.000000	0.000000	3.360911	19.890204	0.00%	0.00%	No Data	0	None	None	Chronic	Acute

Hardness

Metal limitations are developed using the mixed hardness of the effluent and receiving waters

Chronic  
100.00      Acute  
100.00



## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002

Permit Writer  
 Date Entered  
 Facility Name  
 KPDES Number  
 Outfall Number  
 Case

Status:  
 Is this an existing facility – Enter “E”

Is this an existing facility with an increase in pollutant load – Enter “I”

Is this a new facility – Enter “N”

Is this a regional facility with an approved up-to-date 201 plan – Enter “R”

Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter “A”

Receiving Water Name

Discharge Mile Point

Public Water Supply Name

Intake Water Name

Intake Mile Point

Total Effluent Flow ( $Q_T$ )

Receiving Water 7Q10 ( $Q_{RW7Q10}$ )

Receiving Water Harmonic Mean ( $Q_{RWHM}$ )

Receiving Water pH

Receiving Water Temperature

Intake Water 7Q10 ( $Q_{IW7Q10}$ )

Intake Water Harmonic Mean ( $Q_{IWHM}$ )

Effluent Hardness

Receiving Water Hardness

Zone of Initial Dilution (ZID)

Mixing Zone (MZ)

Acute to Chronic Ratio (ACR)

Impaired

Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014

Ronnie Thompson  
 1/8/2010  
 Kinder Morgan  
 KY0104566  
 002  
 Reissuance

E  
 Kelley Creek  
 0.3  
 Henderson Water  
 Utility  
 Ohio River  
 179.1

0.107	MGD
0	cfs
0	cfs
7.5	SU
20.00	°C
12900	cfs
60900	cfs
100	(as mg/l CaCO <sub>3</sub> )
100	(as mg/l CaCO <sub>3</sub> )
1	
0	
0.1	
No	
No	

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002

### Definitions

Acute to Chronic Ratio  
 Aquatic Life Acute Criteria  
 Aquatic Life Chronic Criteria  
 Human Health Criteria - Fish Only  
 Human Health Criteria - Fish & Water  
 End of Pipe Effluent Limit  
 Instream Background Concentration  
 Toxicity Units - Acute  
 Effluent Hardness

ACR  
 $C_A$   
 $C_C$   
 $C_{HHFO}$   
 $C_{HHFW}$   
 $C_T$   
 $C_U$   
 $TU_a$   
 $H_T$

Total Effluent Flow  
 Receiving Water 7Q10  
 Receiving Water Harmonic Mean  
 Intake Water 7Q10  
 Intake Water Harmonic Mean  
 Zone of Initial Dilution  
 Mixing Zone  
 Toxicity Units - Chronic  
 Receiving Water Hardness

$Q_T$   
 $Q_{RW7Q10}$   
 $Q_{RWHM}$   
 $Q_{IW7Q10}$   
 $Q_{IWHM}$   
 ZID  
 MZ  
 $TU_c$   
 $H_{RW}$

### Aquatic Life - Chemical Specific

#### Acute

NO ZID given  $C_T = C_A$   
 ZID given  $C_T = (C_A - C_U) \times (ZID)$

### Human Health - Chemical Specific

#### Fish Only: Mixing Zone / Complete Mix

Carcinogen / Non-Carcinogen  
 $C_T = \{C_{HHFO}[Q_T + (MZ)(Q_{RWHM})] - [C_U(MZ)(Q_{RWHM})]\}/Q_T$

#### Fish & Water Only: Mixing Zone / Applicable at point of withdrawal

Carcinogen  
 Non-Carcinogen  
 $C_T = \{C_{HHFW}[Q_T + (Q_{IWHM})] - [C_U(Q_{IWHM})]\}/Q_T$   
 $C_T = \{C_{HHFW}[Q_T + (Q_{IW7Q10})] - [C_U(Q_{IW7Q10})]\}/Q_T$

### Aquatic Life - Whole Effluent Toxicity

#### Acute (Units $TU_a$ )

NO ZID given  $C_T = C_A$   
 ZID given  $C_T = (C_A - C_U) \times (ZID)$

#### Chronic Mixing Zone / Complete Mix (Units $TU_c$ )

$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$   
 Conversion of  $TU_c$  to  $TU_a$ :  $TU_c \times ACR = TU_a$

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002

### Metal Aquatic Criteria

#### Pollutant

Total Recoverable Cadmium  
 Chromium III  
 Total Recoverable Copper  
 Total Recoverable Lead  
 Total Recoverable Nickel  
 Total Recoverable Silver  
 Total Recoverable Zinc

#### Acute Criteria

$$e^{(1.0166 (\ln \text{Hardness}) - 3.924)} \\ e^{(0.8190 (\ln \text{Hardness}) + 3.7256)} \\ e^{(0.9422 (\ln \text{Hardness}) - 1.700)} \\ e^{(1.273 (\ln \text{Hardness}) - 1.460)} \\ e^{(0.8460 (\ln \text{Hardness}) + 2.255)} \\ e^{(1.72 (\ln \text{Hardness}) - 6.59)} \\ e^{(0.8473 (\ln \text{Hardness}) + 0.884)}$$

#### Chronic Criteria

$$e^{(0.7409 (\ln \text{Hardness}) - 4.719)} \\ e^{(0.8190 (\ln \text{Hardness}) + 0.6848)} \\ e^{(0.8545 (\ln \text{Hardness}) - 1.702)} \\ e^{(1.273 (\ln \text{Hardness}) - 4.705)} \\ e^{(0.8460 (\ln \text{Hardness}) + 0.0584)} \\ e^{(0.8473 (\ln \text{Hardness}) + 0.884)}$$

### Hardness (as mg/l CaCO<sub>3</sub>)

Zone Initial Dilution (ZID)  
 Mixing Zone

### Total Ammonia Criteria

Chronic - applies state wide - unionized criteria of 0.05 mg/l  
 °C

Acute - applies to the Ohio River (ORSANCO Criteria)

$$H_{RW} + [H_T + H_{RW}] / ZID \\ [(Q_{RW7Q10})(MZ)(H_{RW}) + (Q_T)(H_T)] / [(QRW7Q10)(MZ) + (QT)]$$

$$[0.05 * (1 + 10^{(pKa-pH)})] / 1.2 \\ [0.411 / (1 + 10^{(7.204-pH)})] + [58.4 / (1 + 10^{(pH-7.204)})]$$

T = Temperature

### Bioaccumulative or Persistent

For new facilities after September 8, 2004 mixing zones shall not be granted for bioaccumulative or persistent pollutants of concern.

Mixing zones for bioaccumulative or persistent pollutants of concern assigned prior to September 8, 2004 shall expire no later than September 8, 2014, unless the permittee agrees to expiration of the mixing zone prior to that date.

Therefore, the application of the more stringent criteria of Human Health Fish & Water Consumption, Human Health Fish Only Consumption, and Aquatic Life Chronic shall apply as end-of-pipe effluent limitations.

### Antidegradation

If a new facility or an existing facility that will have a pollutant load increase, the effluent limits are halved unless the receiving stream is impaired or the permittee has demonstrated a negative socioeconomic or cost benefit analysis.

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002

### Reasonable Potential Analysis

In establishing water quality based effluent conditions the Division of Water must determine if the pollutant concentrations in the discharge will cause, have the reasonable potential to cause, or contribute to an excursion of any water standard. The process by which the Division of Water makes this determination is known as a Reasonable Potential Analysis.

A Reasonable Potential Analysis is performed by first calculating the expected effluent limitations for those pollutants with water quality criteria. The calculated limits are then compared to the concentrations reported on the KPDES permit application and/or a summarization of the values reported on the Discharge Monitoring Report (DMRs) submitted during the term of the permit. This comparison is made by dividing the reported value by the calculated effluent limitation and converting to a percentage. The following criteria are used in determining how the pollutant will be addressed in the permit.

### New Permits or New Pollutants on Permit Renewals

If the reported concentration is less than 70% of the calculated effluent limit then no monitoring or limitations will be required.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is less than 12 then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is equal or greater than 12 then an effluent limitation will be required.

### Permit Renewals - Existing Pollutants

If the reported concentration is less than 70% of the calculated effluent limit then and the source of the reported concentration was the DMRs for that facility and there were more than 12 DMRs utilized to determine the reported concentrations then the pollutant will be removed from the permit.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% then an effluent limitation will be required.

In all cases, the Division of Water still may exercise its Best Professional Judgment in the implementation of the results.

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Chloride	16887006	1,814.000	1,814.000	600.000000	1,200.000000	302.33%	151.17%	DMR	18	Limit	Limit	Chronic	Acute
Total Residual Chlorine		0.000000	0.000000	0.011000	0.019000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Color		0.000000	0.000000	5,841.243224	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Fluoride		0.000000	0.000000	155,766.485981	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Nitrate-Nitrite (as N)	14797558	0.000000	0.000000	778,832.429907	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Alpha		0.000000	0.000000	NA	15.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Beta		0.000000	0.000000	NA	50.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Radium		0.000000	0.000000	NA	5.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Sulfate (as SO4)		0.000000	0.000000	19,470,810.747664	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Surfactants		0.000000	0.000000	38,941.621495	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Barium	7440393	0.000000	0.000000	77,883.242991	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Iron	7439896	4.600000	4.600000	1.000000	4.000000	460.00%	115.00%	DMR	18	Limit	Limit	Chronic	Acute
Total Recoverable Antimony	7440360	0.000000	0.000000	0.640000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Arsenic	7440382	0.000000	0.000000	0.150000	0.340000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Beryllium	7440417	0.000000	0.000000	311.532972	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Cadmium	7440439	0.000000	0.000000	0.000271	0.002133	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Chromium	7440439	0.000000	0.000000	7,788.324299	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Copper	7440508	0.000000	0.000000	0.009329	0.013999	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Lead	7439921	0.000000	0.000000	0.003182	0.081645	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Mercury	7439976	0.000000	0.000000	0.000051	0.001700	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Total Recoverable Nickel	7440020	0.000000	0.000000	0.052163	0.469174	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Selenium	7782492	0.000000	0.000000	0.005000	0.020000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Silver	7440224	0.000000	0.000000	NA	0.003784	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Recoverable Thallium	7440280	0.000000	0.000000	0.006300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Zinc	7440666	0.000000	0.000000	0.119816	0.119816	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Free Cyanide	57125	0.000000	0.000000	0.005200	0.022000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrolein	107028	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrylonitrile	107131	0.000000	0.000000	0.000250	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzene	71432	0.000000	0.000000	0.051000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bromoform	75252	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Carbon Tetrachloride	56235	0.000000	0.000000	0.001600	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorobenzene	108907	0.000000	0.000000	21.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorodibromomethane	124481	0.000000	0.000000	0.013000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloroform	67663	0.000000	0.000000	0.470000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dichlorodibromomethane	75274	0.000000	0.000000	0.017000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloroethane	107062	0.000000	0.000000	0.037000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1-Dichloroethylene	75354	0.000000	0.000000	0.003200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloropropane	78875	0.000000	0.000000	0.015000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichloropropene	542756	0.000000	0.000000	1.700000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Ethylbenzene	100414	0.000000	0.000000	29.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Methyl Bromide	74839	0.000000	0.000000	1.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Methylene Chloride	75092	0.000000	0.000000	0.590000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,2,2-Tetrachloroethane	79345	0.000000	0.000000	0.004000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Tetrachloroethylene	127184	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Toluene	108883	0.000000	0.000000	200.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Trans-Dichloroethylene	156605	0.000000	0.000000	140.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,1-Trichloroethane	71556	0.000000	0.000000	15,576.648598	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
1,1,2-Trichloroethane	79005	0.000000	0.000000	0.016000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Trichloroethylene	79016	0.000000	0.000000	0.030000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Vinyl Chloride	75014	0.000000	0.000000	0.530000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chlorophenol	95578	0.000000	0.000000	0.150000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dichlorophenol	120832	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dimethylphenol	105679	0.000000	0.000000	0.850000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrophenol	51285	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pentachlorophenol	87865	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phenol	108952	0.000000	0.000000	1,700.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4,6-Trichlorophenol	88062	0.000000	0.000000	0.002400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acenaphthene	83329	0.000000	0.000000	0.990000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Anthracene	120127	0.000000	0.000000	40.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzidine	92875	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)anthracene	56553	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)pyrene	50328	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(k)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroisopropyl)ether	108601	0.000000	0.000000	65.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-ethylhexyl)phthalate	117817	0.000000	0.000000	0.002200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Butylbenzyl phthalate	85687	0.000000	0.000000	1.900000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chloronaphthalene	91587	0.000000	0.000000	1.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chrysene	218019	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dibenzo(a,h)anthracene	53703	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichlorobenzene	95501	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichlorobenzene	541731	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,4-Dichlorobenzene	106467	0.000000	0.000000	2.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
3,3-Dichlorobenzidine	91941	0.000000	0.000000	0.000028	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Diethyl phthalate	84662	0.000000	0.000000	44.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dimethyl phthalate	131113	0.000000	0.000000	1,100.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Di-n-butyl phthalate	84742	0.000000	0.000000	4.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrotoluene	121142	0.000000	0.000000	0.003400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Diphenylhydrazine	122667	0.000000	0.000000	0.000200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluoranthene	206440	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluorene	86737	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobenzene	118741	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobutadiene	87683	0.000000	0.000000	0.018000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorocyclopentadiene	77474	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Hexachloroethane	67721	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Indeno(1,2,3-cd)pyrene	193395	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Isophorone	78591	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Nitrobenzene	98953	0.000000	0.000000	0.690000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodimethylamine	62759	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodi-n-Propylamine	621647	0.000000	0.000000	0.000510	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodiphenylamine	86306	0.000000	0.000000	0.006000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pyrene	129000	0.000000	0.000000	4.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2,4-Trichlorobenzene	120821	0.000000	0.000000	0.940000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Aldrin	309002	0.000000	0.000000	0.000000	0.003000	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
alpha-BHC	319846	0.000000	0.000000	0.000005	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Beta-BHC	319857	0.000000	0.000000	0.000017	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
gamma-BHC (Lindane)	58899	0.000000	0.000000	0.000063	0.000950	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Chlordane	57749	0.000000	0.000000	0.000001	0.002400	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDT	50293	0.000000	0.000000	0.000000	0.001100	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDE	72559	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
4,4'-DDD	72548	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dieldrin	60571	0.000000	0.000000	0.000000	0.000240	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Alpha-Endosulfan	959988	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Beta-Endosulfan	33213659	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endosulfan sulfate	1031078	0.000000	0.000000	0.089000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Endrin	72208	0.000000	0.000000	0.000036	0.000086	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endrin aldehyde	7421934	0.000000	0.000000	0.000300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Heptachlor	76448	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Heptachlor epoxide	1024573	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Polychlorinated Biphenyls (PCBs)	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA	
Toxaphene	8001352	0.000000	0.000000	0.000000	0.000730	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
1,2,4,5-Tetrachlorobenzene	95943	0.000000	0.000000	0.001100	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-methyl-4,6-dinitrophenol	534521	0.000000	0.000000	0.280000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-D	94757	0.000000	0.000000	25,737.434486	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-TP (Silvex)	93721	0.000000	0.000000	778.832430	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-trichlorophenol	95954	0.000000	0.000000	3.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Asbestos	1332214	0.000000	0.000000	2,573,743,448.59	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Benzo(b)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroethyl)ether	111444	0.000000	0.000000	0.000530	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(chloromethyl)ether	542881	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloropyrifos	2921882	0.000000	0.000000	0.000041	0.000083	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (III)	16065831	0.000000	0.000000	0.086180	1.803049	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (VI)	18540299	0.000000	0.000000	0.011000	0.016000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Demeton	8065483	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Dinitrophenols	25550587	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Guthion	86500	0.000000	0.000000	0.000010	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 002

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 003

Permit Writer  
 Date Entered  
 Facility Name  
 KPDES Number  
 Outfall Number  
 Case

Status:  
 Is this an existing facility – Enter “E”  
 Is this an existing facility with an increase in pollutant load – Enter “I”

Is this a new facility – Enter “N”  
 Is this a regional facility with an approved up-to-date 201 plan – Enter “R”

Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter “A”

Receiving Water Name  
 Discharge Mile Point

Public Water Supply Name

Intake Water Name  
 Intake Mile Point

Total Effluent Flow ( $Q_T$ )

Receiving Water 7Q10 ( $Q_{RW7Q10}$ )

Receiving Water Harmonic Mean ( $Q_{RWHM}$ )

Receiving Water pH

Receiving Water Temperature

Intake Water 7Q10 ( $Q_{IW7Q10}$ )

Intake Water Harmonic Mean ( $Q_{IWHM}$ )

Effluent Hardness

Receiving Water Hardness

Zone of Initial Dilution (ZID)

Mixing Zone (MZ)

Acute to Chronic Ratio (ACR)

Impaired

Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014

Ronnie Thompson  
 1/8/2010  
 Kinder Morgan  
 KY0104566  
 003  
 Reissuance

E  
 UT of Kelly Creek  
 0.6  
 Henderson Water  
 Utility  
 Ohio River  
 179.1

0.059	MGD
0	cfs
0	cfs
7.5	SU
20.00	°C
12900	cfs
60900	cfs
173	(as mg/l CaCO <sub>3</sub> )
100	(as mg/l CaCO <sub>3</sub> )
1	
0	
0.1	
No	
No	

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 003

### Definitions

Acute to Chronic Ratio  
 Aquatic Life Acute Criteria  
 Aquatic Life Chronic Criteria  
 Human Health Criteria - Fish Only  
 Human Health Criteria - Fish & Water  
 End of Pipe Effluent Limit  
 Instream Background Concentration  
 Toxicity Units - Acute  
 Effluent Hardness

ACR  
 $C_A$   
 $C_C$   
 $C_{HHFO}$   
 $C_{HHFW}$   
 $C_T$   
 $C_U$   
 $TU_a$   
 $H_T$

Total Effluent Flow  
 Receiving Water 7Q10  
 Receiving Water Harmonic Mean  
 Intake Water 7Q10  
 Intake Water Harmonic Mean  
 Zone of Initial Dilution  
 Mixing Zone  
 Toxicity Units - Chronic  
 Receiving Water Hardness

$Q_T$   
 $Q_{RW7Q10}$   
 $Q_{RWHM}$   
 $Q_{IW7Q10}$   
 $Q_{IWHM}$   
 ZID  
 MZ  
 $TU_c$   
 $H_{RW}$

### Aquatic Life - Chemical Specific

#### Acute

NO ZID given  $C_T = C_A$   
 ZID given  $C_T = (C_A - C_U) \times (ZID)$

### Human Health - Chemical Specific

#### Fish Only: Mixing Zone / Complete Mix

Carcinogen / Non-Carcinogen  
 $C_T = \{C_{HHFO}[Q_T + (MZ)(Q_{RWHM})] - [C_U(MZ)(Q_{RWHM})]\}/Q_T$

#### Fish & Water Only: Mixing Zone / Applicable at point of withdrawal

Carcinogen  
 Non-Carcinogen  
 $C_T = \{C_{HHFW}[Q_T + (Q_{IWHM})] - [C_U(Q_{IWHM})]\}/Q_T$   
 $C_T = \{C_{HHFW}[Q_T + (Q_{IW7Q10})] - [C_U(Q_{IW7Q10})]\}/Q_T$

### Aquatic Life - Whole Effluent Toxicity

#### Acute (Units $TU_a$ )

NO ZID given  $C_T = CA$   
 ZID given  $C_T = (C_A - C_U) \times (ZID)$

#### Chronic Mixing Zone / Complete Mix (Units $TU_c$ )

$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$   
 Conversion of  $TU_c$  to  $TU_a$ :  $TU_c \times ACR = TU_a$

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 003

### Metal Aquatic Criteria

#### Pollutant

Total Recoverable Cadmium  
 Chromium III  
 Total Recoverable Copper  
 Total Recoverable Lead  
 Total Recoverable Nickel  
 Total Recoverable Silver  
 Total Recoverable Zinc

#### Acute Criteria

$$\begin{aligned} &e^{(1.0166(\ln \text{Hardness}) - 3.924)} \\ &e^{(0.8190(\ln \text{Hardness}) + 3.7256)} \\ &e^{(0.9422(\ln \text{Hardness}) - 1.700)} \\ &e^{(1.273(\ln \text{Hardness}) - 1.460)} \\ &e^{(0.8460(\ln \text{Hardness}) + 2.255)} \\ &e^{(1.72(\ln \text{Hardness}) - 6.59)} \\ &e^{(0.8473(\ln \text{Hardness}) + 0.884)} \end{aligned}$$

#### Chronic Criteria

$$\begin{aligned} &e^{(0.7409(\ln \text{Hardness}) - 4.719)} \\ &e^{(0.8190(\ln \text{Hardness}) + 0.6848)} \\ &e^{(0.8545(\ln \text{Hardness}) - 1.702)} \\ &e^{(1.273(\ln \text{Hardness}) - 4.705)} \\ &e^{(0.8460(\ln \text{Hardness}) + 0.0584)} \\ &e^{(0.8473(\ln \text{Hardness}) + 0.884)} \end{aligned}$$

### Hardness (as mg/l CaCO<sub>3</sub>)

Zone Initial Dilution (ZID)  
 Mixing Zone

$$H_{RW} + [H_T + H_{RW}]/ZID$$

$$[(Q_{RW7Q10})(MZ)(H_{RW}) + (Q_T)(H_T)]/[(QRW7Q10)(MZ)+(QT)]$$

T = Temperature

### Total Ammonia Criteria

Chronic - applies state wide - unionized criteria of 0.05 mg/l  
 °C

Acute - applies to the Ohio River (ORSANCO Criteria)

$$[0.05 * (1 + 10^{(pKa-pH)})]/1.2$$

$$[0.411/(1+10^{(7.204-pH)})] + [58.4/(1+10^{(pH-7.204)})]$$

### Bioaccumulative or Persistent

For new facilities after September 8, 2004 mixing zones shall not be granted for bioaccumulative or persistent pollutants of concern.

Mixing zones for bioaccumulative or persistent pollutants of concern assigned prior to September 8, 2004 shall expire no later than September 8, 2014, unless the permittee agrees to expiration of the mixing zone prior to that date.

Therefore, the application of the more stringent criteria of Human Health Fish & Water Consumption, Human Health Fish Only Consumption, and Aquatic Life Chronic shall apply as end-of-pipe effluent limitations.

### Antidegradation

If a new facility or an existing facility that will have a pollutant load increase, the effluent limits are halved unless the receiving stream is impaired or the permittee has demonstrated a negative socioeconomic or cost benefit analysis.

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 003

### Reasonable Potential Analysis

In establishing water quality based effluent conditions the Division of Water must determine if the pollutant concentrations in the discharge will cause, have the reasonable potential to cause, or contribute to an excursion of any water standard. The process by which the Division of Water makes this determination is known as a Reasonable Potential Analysis.

A Reasonable Potential Analysis is performed by first calculating the expected effluent limitations for those pollutants with water quality criteria. The calculated limits are then compared to the concentrations reported on the KPDES permit application and/or a summarization of the values reported on the Discharge Monitoring Report (DMRs) submitted during the term of the permit. This comparison is made by dividing the reported value by the calculated effluent limitation and converting to a percentage. The following criteria are used in determining how the pollutant will be addressed in the permit.

### New Permits or New Pollutants on Permit Renewals

If the reported concentration is less than 70% of the calculated effluent limit then no monitoring or limitations will be required.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is less than 12 then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is equal or greater than 12 then an effluent limitation will be required.

### Permit Renewals - Existing Pollutants

If the reported concentration is less than 70% of the calculated effluent limit then and the source of the reported concentration was the DMRs for that facility and there were more than 12 DMRs utilized to determine the reported concentrations then the pollutant will be removed from the permit.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% then an effluent limitation will be required.

In all cases, the Division of Water still may exercise its Best Professional Judgment in the implementation of the results.

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 003**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Chloride	16887006	7.000000	7.000000	600.000000	1,200.000000	1.17%	0.58%	DMR	12	Remove	Remove	Chronic	Acute
Total Residual Chlorine		0.000000	0.000000	0.011000	0.019000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Color		0.000000	0.000000	10,593.380085	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Fluoride		0.000000	0.000000	282,490.135593	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Nitrate-Nitrite (as N)	14797558	0.000000	0.000000	1,412,450.677966	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Alpha		0.000000	0.000000	NA	15.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Beta		0.000000	0.000000	NA	50.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Radium		0.000000	0.000000	NA	5.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Sulfate (as SO4)		0.000000	0.000000	35,311,266.949153	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Surfactants		0.000000	0.000000	70,622.533898	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Barium	7440393	0.000000	0.000000	141,245.067797	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Iron	7439896	0.880000	0.880000	1.000000	4.000000	88.00%	22.00%	DMR	12	Monitoring	Remove	Chronic	Acute
Total Recoverable Antimony	7440360	0.000000	0.000000	0.640000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Arsenic	7440382	0.003000	0.003000	0.150000	0.340000	2.00%	0.88%	DMR	7	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Beryllium	7440417	0.000000	0.000000	564.980271	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Cadmium	7440439	0.000000	0.000000	0.000406	0.003724	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Chromium	7440439	0.000000	0.000000	14,124.506780	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Copper	7440508	0.010000	0.010000	0.014902	0.023463	67.11%	42.62%	DMR	7	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Lead	7439921	0.003000	0.003000	0.006393	0.164045	46.93%	1.83%	DMR	7	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Mercury	7439976	0.000000	0.000000	0.000051	0.001700	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Total Recoverable Nickel	7440020	0.000000	0.000000	0.082937	0.745969	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Selenium	7782492	0.000000	0.000000	0.005000	0.020000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Silver	7440224	0.000000	0.000000	NA	0.009715	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Recoverable Thallium	7440280	0.000000	0.000000	0.006300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Zinc	7440666	0.000000	0.000000	0.190639	0.190639	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Free Cyanide	57125	0.000000	0.000000	0.005200	0.022000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrolein	107028	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrylonitrile	107131	0.000000	0.000000	0.000250	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzene	71432	0.000000	0.000000	0.051000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bromoform	75252	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Carbon Tetrachloride	56235	0.000000	0.000000	0.001600	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorobenzene	108907	0.000000	0.000000	21.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorodibromomethane	124481	0.000000	0.000000	0.013000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloroform	67663	0.000000	0.000000	0.470000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dichlorobromomethane	75274	0.000000	0.000000	0.017000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloroethane	107062	0.000000	0.000000	0.037000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1-Dichloroethylene	75354	0.000000	0.000000	0.003200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloropropane	78875	0.000000	0.000000	0.015000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichloropropene	542756	0.000000	0.000000	1.700000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Ethylbenzene	100414	0.000000	0.000000	29.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Methyl Bromide	74839	0.000000	0.000000	1.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 003**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Methylene Chloride	75092	0.000000	0.000000	0.590000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,2-Tetrachloroethane	79345	0.000000	0.000000	0.004400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Tetrachloroethylene	127184	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Toluene	108883	0.000000	0.000000	200.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Trans-Dichloroethylene	156605	0.000000	0.000000	140.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,1-Trichloroethane	71556	0.000000	0.000000	28,249.013559	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
1,1,2-Trichloroethane	79005	0.000000	0.000000	0.016000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Trichloroethylene	79016	0.000000	0.000000	0.030000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Vinyl Chloride	75014	0.000000	0.000000	0.530000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chlorophenol	95578	0.000000	0.000000	0.150000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dichlorophenol	120832	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dimethylphenol	105679	0.000000	0.000000	0.850000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrophenol	51285	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pentachlorophenol	87865	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phenol	108952	0.000000	0.000000	1,700.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4,6-Trichlorophenol	88062	0.000000	0.000000	0.002400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acenaphthene	83329	0.000000	0.000000	0.990000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Anthracene	120127	0.000000	0.000000	40.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzidine	92875	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)anthracene	56553	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)pyrene	50328	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(k)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroisopropyl)ether	108601	0.000000	0.000000	65.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-ethylhexyl)phthalate	117817	0.000000	0.000000	0.002200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Butylbenzyl phthalate	85687	0.000000	0.000000	1.900000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chloronaphthalene	91587	0.000000	0.000000	1.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chrysene	218019	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dibenzo(a,h)anthracene	53703	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichlorobenzene	95501	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichlorobenzene	541731	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,4-Dichlorobenzene	106467	0.000000	0.000000	2.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
3,3-Dichlorobenzidine	91941	0.000000	0.000000	0.000028	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Diethyl phthalate	84662	0.000000	0.000000	44.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dimethyl phthalate	131113	0.000000	0.000000	1,100.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Di-n-butyl phthalate	84742	0.000000	0.000000	4.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrotoluene	121142	0.000000	0.000000	0.003400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Diphenylhydrazine	122667	0.000000	0.000000	0.000200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluoranthene	206440	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluorene	86737	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobenzene	118741	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobutadiene	87683	0.000000	0.000000	0.018000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorocyclopentadiene	77474	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 003**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Hexachloroethane	67721	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Indeno(1,2,3-cd)pyrene	193395	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Isophorone	78591	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Nitrobenzene	98953	0.000000	0.000000	0.690000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodimethylamine	62759	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodi-n-Propylamine	621647	0.000000	0.000000	0.000510	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodiphenylamine	86306	0.000000	0.000000	0.006000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pyrene	129000	0.000000	0.000000	4.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2,4-Trichlorobenzene	120821	0.000000	0.000000	0.940000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Aldrin	309002	0.000000	0.000000	0.000000	0.003000	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
alpha-BHC	319846	0.000000	0.000000	0.000005	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Beta-BHC	319857	0.000000	0.000000	0.000017	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
gamma-BHC (Lindane)	58899	0.000000	0.000000	0.000063	0.000950	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Chlordane	57749	0.000000	0.000000	0.000001	0.002400	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDT	50293	0.000000	0.000000	0.000000	0.001100	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDE	72559	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
4,4'-DDD	72548	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dieldrin	60571	0.000000	0.000000	0.000000	0.000240	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Alpha-Endosulfan	959988	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Beta-Endosulfan	33213659	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endosulfan sulfate	1031078	0.000000	0.000000	0.089000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Endrin	72208	0.000000	0.000000	0.000036	0.000086	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endrin aldehyde	7421934	0.000000	0.000000	0.000300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Heptachlor	76448	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Heptachlor epoxide	1024573	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Polychlorinated Biphenyls (PCBs)	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA	
Toxaphene	8001352	0.000000	0.000000	0.000000	0.000730	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
1,2,4,5-Tetrachlorobenzene	95943	0.000000	0.000000	0.001100	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-methyl-4,6-dinitrophenol	534521	0.000000	0.000000	0.280000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-D	94757	0.000000	0.000000	46,676,307.288	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-TP (Silvex)	93721	0.000000	0.000000	1,412,450.678	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-trichlorophenol	95954	0.000000	0.000000	3,600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Asbestos	1332214	0.000000	0.000000	4,667,630,728.81	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Benzo(b)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroethyl)ether	111444	0.000000	0.000000	0.000530	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(chloromethyl)ether	542881	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloropyrifos	2921882	0.000000	0.000000	0.000041	0.000083	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (III)	16065831	0.000000	0.000000	0.135010	2.824667	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (VI)	18540299	0.050000	0.050000	0.011000	0.016000	45.45%	31.25%	DMR	7	Monitoring	Monitoring	Chronic	Acute
Demeton	8065483	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Dinitrophenols	25550587	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Guthion	86500	0.000000	0.000000	0.000010	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 003**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Hexachlorocyclo-hexane-Technical	319868	0.000000	0.000000	0.000041	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hydrogen Sulfide, Undissociated	7783064	0.000000	0.000000	0.002000	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Malathion	121755	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Methoxychlor	72435	0.000000	0.000000	0.000030	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Mirex	2385855	0.000000	0.000000	0.000001	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Nitrosamines, Other		0.000000	0.000000	0.001240	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodibutylamine	924163	0.000000	0.000000	0.000220	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodiethylamine	55185	0.000000	0.000000	0.001240	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosopyrrolidine	930552	0.000000	0.000000	0.034000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Parathion	56382	0.000000	0.000000	0.000013	0.000065	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Pentachlorobenzene	608935	0.000000	0.000000	0.001500	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phthalate esters		0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Total Dissolved Solids		0.000000	0.000000	105,933,800.847458	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Tritium		0.000000	0.000000	NA	20,000.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Strontium-90		0.000000	0.000000	NA	8.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Uranium		0.000000	0.000000	NA	0.030000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Ammonia		0.000000	0.000000	3.360911	19.890204	0.00%	0.00%	No Data	0	None	None	Chronic	Acute

Hardness

Metal limitations are developed using the mixed hardness of the effluent and receiving waters

Chronic 173.00      Acute 173.00

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 004

Permit Writer  
 Date Entered  
 Facility Name  
 KPDES Number  
 Outfall Number  
 Case

Status:  
 Is this an existing facility – Enter “E”  
 Is this an existing facility with an increase in pollutant load – Enter “I”

Is this a new facility – Enter “N”  
 Is this a regional facility with an approved up-to-date 201 plan – Enter “R”

Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter “A”

Receiving Water Name  
 Discharge Mile Point

Public Water Supply Name

Intake Water Name  
 Intake Mile Point

Total Effluent Flow ( $Q_T$ )

Receiving Water 7Q10 ( $Q_{RW7Q10}$ )

Receiving Water Harmonic Mean ( $Q_{RWHM}$ )

Receiving Water pH

Receiving Water Temperature

Intake Water 7Q10 ( $Q_{IW7Q10}$ )

Intake Water Harmonic Mean ( $Q_{IWHM}$ )

Effluent Hardness

Receiving Water Hardness

Zone of Initial Dilution (ZID)

Mixing Zone (MZ)

Acute to Chronic Ratio (ACR)

Impaired

Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014

Ronnie Thompson  
 1/8/2010  
 Kinder Morgan  
 KY0104566  
 004  
 Reissuance

E  
 UT of Kelly Creek  
 0.6  
 Henderson Water  
 Utility  
 Ohio River  
 179.1

0.035	MGD
0	cfs
0	cfs
7.5	SU
20.00	°C
12900	cfs
60900	cfs
100	(as mg/l CaCO <sub>3</sub> )
100	(as mg/l CaCO <sub>3</sub> )
1	
0	
0.1	
No	
No	

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 004

### Definitions

Acute to Chronic Ratio  
 Aquatic Life Acute Criteria  
 Aquatic Life Chronic Criteria  
 Human Health Criteria - Fish Only  
 Human Health Criteria - Fish & Water  
 End of Pipe Effluent Limit  
 Instream Background Concentration  
 Toxicity Units - Acute  
 Effluent Hardness

ACR  
 $C_A$   
 $C_C$   
 $C_{HHFO}$   
 $C_{HHFW}$   
 $C_T$   
 $C_U$   
 $TU_a$   
 $H_T$

Total Effluent Flow  
 Receiving Water 7Q10  
 Receiving Water Harmonic Mean  
 Intake Water 7Q10  
 Intake Water Harmonic Mean  
 Zone of Initial Dilution  
 Mixing Zone  
 Toxicity Units - Chronic  
 Receiving Water Hardness

$Q_T$   
 $Q_{RW7Q10}$   
 $Q_{RWHM}$   
 $Q_{IW7Q10}$   
 $Q_{IWHM}$   
 ZID  
 MZ  
 $TU_c$   
 $H_{RW}$

### Aquatic Life - Chemical Specific

#### Acute

NO ZID given  $C_T = C_A$   
 ZID given  $C_T = (C_A - C_U) \times (ZID)$

### Human Health - Chemical Specific

#### Fish Only: Mixing Zone / Complete Mix

Carcinogen / Non-Carcinogen  
 $C_T = \{C_{HHFO}[Q_T + (MZ)(Q_{RWHM})] - [C_U(MZ)(Q_{RWHM})]\}/Q_T$

#### Fish & Water Only: Mixing Zone / Applicable at point of withdrawal

Carcinogen  
 Non-Carcinogen  
 $C_T = \{C_{HHFW}[Q_T + (Q_{IWHM})] - C_U(Q_{IWHM})\}/Q_T$   
 $C_T = \{C_{HHFW}[Q_T + (Q_{IW7Q10})] - C_U(Q_{IW7Q10})\}/Q_T$

### Aquatic Life - Whole Effluent Toxicity

#### Acute (Units $TU_a$ )

NO ZID given  $C_T = CA$   
 ZID given  $C_T = (C_A - C_U) \times (ZID)$

#### Chronic Mixing Zone / Complete Mix (Units $TU_c$ )

$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$   
 Conversion of  $TU_c$  to  $TU_a$ :  $TU_c \times ACR = TU_a$

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 004

### Metal Aquatic Criteria

#### Pollutant

Total Recoverable Cadmium  
 Chromium III  
 Total Recoverable Copper  
 Total Recoverable Lead  
 Total Recoverable Nickel  
 Total Recoverable Silver  
 Total Recoverable Zinc

#### Acute Criteria

$$\begin{aligned} & e^{(1.0166 (\ln \text{Hardness}) - 3.924)} \\ & e^{(0.8190 (\ln \text{Hardness}) + 3.7256)} \\ & e^{(0.9422 (\ln \text{Hardness}) - 1.700)} \\ & e^{(1.273 (\ln \text{Hardness}) - 1.460)} \\ & e^{(0.8460 (\ln \text{Hardness}) + 2.255)} \\ & e^{(1.72 (\ln \text{Hardness}) - 6.59)} \\ & e^{(0.8473 (\ln \text{Hardness}) + 0.884)} \end{aligned}$$

#### Chronic Criteria

$$\begin{aligned} & e^{(0.7409 (\ln \text{Hardness}) - 4.719)} \\ & e^{(0.8190 (\ln \text{Hardness}) + 0.6848)} \\ & e^{(0.8545 (\ln \text{Hardness}) - 1.702)} \\ & e^{(1.273 (\ln \text{Hardness}) - 4.705)} \\ & e^{(0.8460 (\ln \text{Hardness}) + 0.0584)} \\ & e^{(0.8473 (\ln \text{Hardness}) + 0.884)} \end{aligned}$$

### Hardness (as mg/l CaCO<sub>3</sub>)

Zone Initial Dilution (ZID)  
 Mixing Zone

$$H_{RW} + [H_T + H_{RW}] / ZID$$

$$[(Q_{RW7Q10})(MZ)(H_{RW}) + (Q_T)(H_T)] / [(QRW7Q10)(MZ) + (QT)]$$

T = Temperature

### Total Ammonia Criteria

Chronic - applies state wide - unionized criteria of 0.05 mg/l  
 °C

Acute - applies to the Ohio River (ORSANCO Criteria)

$$[0.05 * (1 + 10^{(pKa - pH)})] / 1.2$$

$$[0.411 / (1 + 10^{(7.204 - pH)})] + [58.4 / (1 + 10^{(pH - 7.204)})]$$

### Bioaccumulative or Persistent

For new facilities after September 8, 2004 mixing zones shall not be granted for bioaccumulative or persistent pollutants of concern.

Mixing zones for bioaccumulative or persistent pollutants of concern assigned prior to September 8, 2004 shall expire no later than September 8, 2014, unless the permittee agrees to expiration of the mixing zone prior to that date.

Therefore, the application of the more stringent criteria of Human Health Fish & Water Consumption, Human Health Fish Only Consumption, and Aquatic Life Chronic shall apply as end-of-pipe effluent limitations.

### Antidegradation

If a new facility or an existing facility that will have a pollutant load increase, the effluent limits are halved unless the receiving stream is impaired or the permittee has demonstrated a negative socioeconomic or cost benefit analysis.

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 004

### Reasonable Potential Analysis

In establishing water quality based effluent conditions the Division of Water must determine if the pollutant concentrations in the discharge will cause, have the reasonable potential to cause, or contribute to an excursion of any water standard. The process by which the Division of Water makes this determination is known as a Reasonable Potential Analysis.

A Reasonable Potential Analysis is performed by first calculating the expected effluent limitations for those pollutants with water quality criteria. The calculated limits are then compared to the concentrations reported on the KPDES permit application and/or a summarization of the values reported on the Discharge Monitoring Report (DMRs) submitted during the term of the permit. This comparison is made by dividing the reported value by the calculated effluent limitation and converting to a percentage. The following criteria are used in determining how the pollutant will be addressed in the permit.

### New Permits or New Pollutants on Permit Renewals

If the reported concentration is less than 70% of the calculated effluent limit then no monitoring or limitations will be required.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is less than 12 then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is equal or greater than 12 then an effluent limitation will be required.

### Permit Renewals - Existing Pollutants

If the reported concentration is less than 70% of the calculated effluent limit then and the source of the reported concentration was the DMRs for that facility and there were more than 12 DMRs utilized to determine the reported concentrations then the pollutant will be removed from the permit.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% then an effluent limitation will be required.

In all cases, the Division of Water still may exercise its Best Professional Judgment in the implementation of the results.

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 004**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Chloride	16887006	34.000000	34.000000	600.000000	1,200.000000	5.67%	2.83%	DMR	1	Monitoring	Monitoring	Chronic	Acute
Total Residual Chlorine		0.000000	0.000000	0.011000	0.019000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Color		0.000000	0.000000	17,857.360714	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Fluoride		0.000000	0.000000	476,196.285714	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Nitrate-Nitrite (as N)	14797558	0.000000	0.000000	2,380,981.428571	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Alpha		0.000000	0.000000	NA	15.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Beta		0.000000	0.000000	NA	50.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Radium		0.000000	0.000000	NA	5.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Sulfate (as SO4)		0.000000	0.000000	59,524,535.714286	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Surfactants		0.000000	0.000000	119,049.071429	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Barium	7440393	0.000000	0.000000	238,098.142857	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Iron	7439896	2.300000	2.300000	1.000000	4.000000	230.00%	57.50%	DMR	1	Limit	Monitoring	Chronic	Acute
Total Recoverable Antimony	7440360	0.000000	0.000000	0.640000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Arsenic	7440382	0.004000	0.004000	0.150000	0.340000	2.67%	1.18%	DMR	1	Monitoring	Monitoring	Chronic	Acute
Total Recoverable Beryllium	7440417	0.000000	0.000000	952.392571	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Cadmium	7440439	0.000000	0.000000	0.000271	0.002133	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Chromium	7440439	0.000000	0.000000	23,809.814286	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Copper	7440508	0.010000	0.010000	0.009329	0.013999	107.19%	71.43%	DMR	1	Limit	Monitoring	Chronic	Acute
Total Recoverable Lead	7439921	0.004000	0.004000	0.003182	0.081645	125.72%	4.90%	DMR	1	Limit	Monitoring	Chronic	Acute
Total Recoverable Mercury	7439976	0.000000	0.000000	0.000051	0.001700	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Total Recoverable Nickel	7440020	0.000000	0.000000	0.052163	0.469174	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Selenium	7782492	0.000000	0.000000	0.005000	0.020000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Silver	7440224	0.000000	0.000000	NA	0.003784	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Recoverable Thallium	7440280	0.000000	0.000000	0.006300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Zinc	7440666	0.000000	0.000000	0.119816	0.119816	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Free Cyanide	57125	0.000000	0.000000	0.005200	0.022000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrolein	107028	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrylonitrile	107131	0.000000	0.000000	0.000250	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzene	71432	0.000000	0.000000	0.051000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bromoform	75252	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Carbon Tetrachloride	56235	0.000000	0.000000	0.001600	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorobenzene	108907	0.000000	0.000000	21.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorodibromomethane	124481	0.000000	0.000000	0.013000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloroform	67663	0.000000	0.000000	0.470000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dichlorobromomethane	75274	0.000000	0.000000	0.017000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloroethane	107062	0.000000	0.000000	0.037000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1-Dichloroethylene	75354	0.000000	0.000000	0.003200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloropropane	78875	0.000000	0.000000	0.015000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichloropropene	542756	0.000000	0.000000	1.700000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Ethylbenzene	100414	0.000000	0.000000	29.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Methyl Bromide	74839	0.000000	0.000000	1.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 004

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Methylene Chloride	75092	0.000000	0.000000	0.590000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,2-Tetrachloroethane	79345	0.000000	0.000000	0.004400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Tetrachloroethylene	127184	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Toluene	108883	0.000000	0.000000	200.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Trans-Dichloroethylene	156605	0.000000	0.000000	140.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,1-Trichloroethane	71556	0.000000	0.000000	47,619.628571	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
1,1,2-Trichloroethane	79005	0.000000	0.000000	0.016000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Trichloroethylene	79016	0.000000	0.000000	0.030000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Vinyl Chloride	75014	0.000000	0.000000	0.530000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chlorophenol	95578	0.000000	0.000000	0.150000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dichlorophenol	120832	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dimethylphenol	105679	0.000000	0.000000	0.850000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrophenol	51285	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pentachlorophenol	87865	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phenol	108952	0.000000	0.000000	1,700.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4,6-Trichlorophenol	88062	0.000000	0.000000	0.002400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acenaphthene	83329	0.000000	0.000000	0.990000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Anthracene	120127	0.000000	0.000000	40.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzidine	92875	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)anthracene	56553	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)pyrene	50328	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(k)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroisopropyl)ether	108601	0.000000	0.000000	65.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-ethylhexyl)phthalate	117817	0.000000	0.000000	0.002200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Butylbenzyl phthalate	85687	0.000000	0.000000	1.900000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chloronaphthalene	91587	0.000000	0.000000	1.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chrysene	218019	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dibenzo(a,h)anthracene	53703	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichlorobenzene	95501	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichlorobenzene	541731	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,4-Dichlorobenzene	106467	0.000000	0.000000	2.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
3,3-Dichlorobenzidine	91941	0.000000	0.000000	0.000028	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Diethyl phthalate	84662	0.000000	0.000000	44.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dimethyl phthalate	131113	0.000000	0.000000	1,100.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Di-n-butyl phthalate	84742	0.000000	0.000000	4.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrotoluene	121142	0.000000	0.000000	0.003400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Diphenylhydrazine	122667	0.000000	0.000000	0.000200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluoranthene	206440	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluorene	86737	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobenzene	118741	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobutadiene	87683	0.000000	0.000000	0.018000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorocyclopentadiene	77474	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 004

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Hexachloroethane	67721	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Indeno(1,2,3-cd)pyrene	193395	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Isophorone	78591	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Nitrobenzene	98953	0.000000	0.000000	0.690000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodimethylamine	62759	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodi-n-Propylamine	621647	0.000000	0.000000	0.000510	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodiphenylamine	86306	0.000000	0.000000	0.006000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pyrene	129000	0.000000	0.000000	4.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2,4-Trichlorobenzene	120821	0.000000	0.000000	0.940000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Aldrin	309002	0.000000	0.000000	0.000000	0.003000	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
alpha-BHC	319846	0.000000	0.000000	0.000005	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Beta-BHC	319857	0.000000	0.000000	0.000017	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
gamma-BHC (Lindane)	58899	0.000000	0.000000	0.000063	0.000950	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Chlordane	57749	0.000000	0.000000	0.000001	0.002400	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDT	50293	0.000000	0.000000	0.000000	0.001100	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDE	72559	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
4,4'-DDD	72548	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dieldrin	60571	0.000000	0.000000	0.000000	0.000240	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Alpha-Endosulfan	959988	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Beta-Endosulfan	33213659	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endosulfan sulfate	1031078	0.000000	0.000000	0.089000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Endrin	72208	0.000000	0.000000	0.000036	0.000086	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endrin aldehyde	7421934	0.000000	0.000000	0.000300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Heptachlor	76448	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Heptachlor epoxide	1024573	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Polychlorinated Biphenyls (PCBs)	0.000000	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Toxaphene	8001352	0.000000	0.000000	0.000000	0.000730	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
1,2,4,5-Tetrachlorobenzene	95943	0.000000	0.000000	0.001100	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-methyl-4,6-dinitrophenol	534521	0.000000	0.000000	0.280000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-D	94757	0.000000	0.000000	78,682.870000	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-TP (Silvex)	93721	0.000000	0.000000	2,380.981429	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-trichlorophenol	95954	0.000000	0.000000	3.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Asbestos	1332214	0.000000	0.000000	7,868,287,000.00	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Benzo(b)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroethyl)ether	111444	0.000000	0.000000	0.000530	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(chloromethyl)ether	542881	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloropyrifos	2921882	0.000000	0.000000	0.000041	0.000083	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (III)	16065831	0.000000	0.000000	0.086180	1.803049	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (VI)	18540299	0.005000	0.005000	0.011000	0.016000	45.45%	31.25%	DMR	1	Monitoring	Monitoring	Chronic	Acute
Demeton	8065483	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Dinitrophenols	25550587	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Guthion	86500	0.000000	0.000000	0.000010	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 004

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 005

Permit Writer  
 Date Entered  
 Facility Name  
 KPDES Number  
 Outfall Number  
 Case

Status:  
 Is this an existing facility – Enter “E”  
 Is this an existing facility with an increase in pollutant load – Enter “I”  
 Is this a new facility – Enter “N”  
 Is this a regional facility with an approved up-to-date 201 plan – Enter “R”  
 Has the permittee made a successful alternatives analysis/socioeconomic demonstration – Enter “A”

Receiving Water Name  
 Discharge Mile Point

Public Water Supply Name

Intake Water Name

Intake Mile Point

Total Effluent Flow ( $Q_T$ )

Receiving Water 7Q10 ( $Q_{RW7Q10}$ )

Receiving Water Harmonic Mean ( $Q_{RWHM}$ )

Receiving Water pH

Receiving Water Temperature

Intake Water 7Q10 ( $Q_{IW7Q10}$ )

Intake Water Harmonic Mean ( $Q_{IWHM}$ )

Effluent Hardness

Receiving Water Hardness

Zone of Initial Dilution (ZID)

Mixing Zone (MZ)

Acute to Chronic Ratio (ACR)

Impaired

Permittee agrees to accept no mixing zone for bioaccumulative or persistent pollutants prior to 09/08/2014

Ronnie Thompson  
 1/8/2010  
 Kinder Morgan  
 KY0104566  
 005  
 Reissuance

E	Kelley Creek	0.4
Henderson Water	Utility	
Ohio River		179.1
0.131		MGD
0		cfs
0		cfs
7.5		SU
20.00		°C
12900		cfs
60900		cfs
258	(as mg/l CaCO <sub>3</sub> )	
100	(as mg/l CaCO <sub>3</sub> )	
1		
0		
0.1		
No		
No		

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 005

### Definitions

Acute to Chronic Ratio  
 Aquatic Life Acute Criteria  
 Aquatic Life Chronic Criteria  
 Human Health Criteria - Fish Only  
 Human Health Criteria - Fish & Water  
 End of Pipe Effluent Limit  
 Instream Background Concentration  
 Toxicity Units - Acute  
 Effluent Hardness

ACR  
 $C_A$   
 $C_C$   
 $C_{HHFO}$   
 $C_{HHFW}$   
 $C_T$   
 $C_U$   
 $TU_a$   
 $H_T$

Total Effluent Flow  
 Receiving Water 7Q10  
 Receiving Water Harmonic Mean  
 Intake Water 7Q10  
 Intake Water Harmonic Mean  
 Zone of Initial Dilution  
 Mixing Zone  
 Toxicity Units - Chronic  
 Receiving Water Hardness

$Q_T$   
 $Q_{RW7Q10}$   
 $Q_{RWHM}$   
 $Q_{IW7Q10}$   
 $Q_{IWHM}$   
 ZID  
 MZ  
 $TU_c$   
 $H_{RW}$

### Aquatic Life - Chemical Specific

#### Acute

NO ZID given  $C_T = C_A$   
 ZID given  $C_T = (C_A - C_U) \times (ZID)$

### Human Health - Chemical Specific

#### Fish Only: Mixing Zone / Complete Mix

Carcinogen / Non-Carcinogen  
 $C_T = \{C_{HHFO}[Q_T + (MZ)(Q_{RWHM})] - [C_U(MZ)(Q_{RWHM})]\}/Q_T$

#### Fish & Water Only: Mixing Zone / Applicable at point of withdrawal

Carcinogen  
 Non-Carcinogen  
 $C_T = \{C_{HHFW}[Q_T + (Q_{IWHM})] - [C_U(Q_{IWHM})]\}/Q_T$   
 $C_T = \{C_{HHFW}[Q_T + (Q_{IW7Q10})] - [C_U(Q_{IW7Q10})]\}/Q_T$

### Aquatic Life - Whole Effluent Toxicity

#### Acute (Units $TU_a$ )

NO ZID given  $C_T = CA$   
 ZID given  $C_T = (C_A - C_U) \times (ZID)$

#### Chronic Mixing Zone / Complete Mix (Units $TU_c$ )

$C_T = \{C_C[Q_T + (MZ)(Q_{RW7Q10})] - [C_U(MZ)(Q_{RW7Q10})]\}/Q_T$   
 Conversion of  $TU_c$  to  $TU_a$ :  $TU_c \times ACR = TU_a$

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 005

### Metal Aquatic Criteria

#### Pollutant

Total Recoverable Cadmium  
 Chromium III  
 Total Recoverable Copper  
 Total Recoverable Lead  
 Total Recoverable Nickel  
 Total Recoverable Silver  
 Total Recoverable Zinc

#### Acute Criteria

$$e^{(1.0166 (\ln \text{Hardness}) - 3.924)} \\ e^{(0.8190 (\ln \text{Hardness}) + 3.7256)} \\ e^{(0.9422 (\ln \text{Hardness}) - 1.700)} \\ e^{(1.273 (\ln \text{Hardness}) - 1.460)} \\ e^{(0.8460 (\ln \text{Hardness}) + 2.255)} \\ e^{(1.72 (\ln \text{Hardness}) - 6.59)} \\ e^{(0.8473 (\ln \text{Hardness}) + 0.884)}$$

#### Chronic Criteria

$$e^{(0.7409 (\ln \text{Hardness}) - 4.719)} \\ e^{(0.8190 (\ln \text{Hardness}) + 0.6848)} \\ e^{(0.8545 (\ln \text{Hardness}) - 1.702)} \\ e^{(1.273 (\ln \text{Hardness}) - 4.705)} \\ e^{(0.8460 (\ln \text{Hardness}) + 0.0584)} \\ e^{(0.8473 (\ln \text{Hardness}) + 0.884)}$$

### Hardness (as mg/l CaCO<sub>3</sub>)

Zone Initial Dilution (ZID)  
 Mixing Zone

### Total Ammonia Criteria

Chronic - applies state wide - unionized criteria of 0.05 mg/l  
 °C

Acute - applies to the Ohio River (ORSANCO Criteria)

$$H_{RW} + [H_T + H_{RW}] / ZID \\ [(Q_{RW7Q10})(MZ)(H_{RW}) + (Q_T)(H_T)] / [(QRW7Q10)(MZ) + (QT)]$$

$$[0.05 * (1 + 10^{(pKa - pH)})] / 1.2 \\ [0.411 / (1 + 10^{(7.204 - pH)})] + [58.4 / (1 + 10^{(pH - 7.204)})]$$

T = Temperature

### Bioaccumulative or Persistent

For new facilities after September 8, 2004 mixing zones shall not be granted for bioaccumulative or persistent pollutants of concern.

Mixing zones for bioaccumulative or persistent pollutants of concern assigned prior to September 8, 2004 shall expire no later than September 8, 2014, unless the permittee agrees to expiration of the mixing zone prior to that date.

Therefore, the application of the more stringent criteria of Human Health Fish & Water Consumption, Human Health Fish Only Consumption, and Aquatic Life Chronic shall apply as end-of-pipe effluent limitations.

### Antidegradation

If a new facility or an existing facility that will have a pollutant load increase, the effluent limits are halved unless the receiving stream is impaired or the permittee has demonstrated a negative socioeconomic or cost benefit analysis.

## STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 005

### Reasonable Potential Analysis

In establishing water quality based effluent conditions the Division of Water must determine if the pollutant concentrations in the discharge will cause, have the reasonable potential to cause, or contribute to an excursion of any water standard. The process by which the Division of Water makes this determination is known as a Reasonable Potential Analysis.

A Reasonable Potential Analysis is performed by first calculating the expected effluent limitations for those pollutants with water quality criteria. The calculated limits are then compared to the concentrations reported on the KPDES permit application and/or a summarization of the values reported on the Discharge Monitoring Report (DMRs) submitted during the term of the permit. This comparison is made by dividing the reported value by the calculated effluent limitation and converting to a percentage. The following criteria are used in determining how the pollutant will be addressed in the permit.

### New Permits or New Pollutants on Permit Renewals

If the reported concentration is less than 70% of the calculated effluent limit then no monitoring or limitations will be required.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is less than 12 then monitoring will be required.

If the reported concentration is equal to or greater than 90% and the number of analysis reported on the KPDES permit application is equal or greater than 12 then an effluent limitation will be required.

### Permit Renewals - Existing Pollutants

If the reported concentration is less than 70% of the calculated effluent limit then and the source of the reported concentration was the DMRs for that facility and there were more than 12 DMRs utilized to determine the reported concentrations then the pollutant will be removed from the permit.

If the reported concentration is equal to or greater than 70% but less than 90% of the calculated effluent limit then monitoring will be required.

If the reported concentration is equal to or greater than 90% then an effluent limitation will be required.

In all cases, the Division of Water still may exercise its Best Professional Judgment in the implementation of the results.

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 005**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Chloride	16887006	49.000000	49.000000	600.000000	1,200.000000	8.17%	4.08%	DMR	27	Remove	Remove	Chronic	Acute
Total Residual Chlorine		0.000000	0.000000	0.011000	0.019000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Color		0.000000	0.000000	4,771.105534	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Fluoride		0.000000	0.000000	127,229.480916	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Nitrate-Nitrite (as N)	14797558	0.000000	0.000000	636,147.404580	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Alpha		0.000000	0.000000	NA	15.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Beta		0.000000	0.000000	NA	50.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Radium		0.000000	0.000000	NA	5.000000	0.00%	0.00%	No Data	0	None	None	NA	Acute
Sulfate (as SO4)		0.000000	0.000000	15,903,685.114504	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Surfactants		0.000000	0.000000	31,807.370229	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Barium	7440393	0.000000	0.000000	63,614.740458	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Iron	7439896	1.900000	1.900000	1.000000	4.000000	190.00%	47.50%	DMR	27	Limit	Remove	Chronic	Acute
Total Recoverable Antimony	7440360	0.000000	0.000000	0.640000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Arsenic	7440382	0.000000	0.000000	0.150000	0.340000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Beryllium	7440417	0.000000	0.000000	254.458962	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Cadmium	7440439	0.000000	0.000000	0.000546	0.005591	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Chromium	7440439	0.000000	0.000000	6,361.474046	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Total Recoverable Copper	7440508	0.000000	0.000000	0.020968	0.034192	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Lead	7439921	0.000000	0.000000	0.010633	0.272849	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Mercury	7439976	0.000000	0.000000	0.000051	0.001700	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Total Recoverable Nickel	7440020	0.000000	0.000000	0.116304	1.046079	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Selenium	7782492	0.000000	0.000000	0.005000	0.020000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Total Recoverable Silver	7440224	0.000000	0.000000	NA	0.019319	0.00%	0.00%	No Data	0	None	None	NA	Acute
Total Recoverable Thallium	7440280	0.000000	0.000000	0.006300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Total Recoverable Zinc	7440666	0.000000	0.000000	0.267474	0.267474	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Free Cyanide	57125	0.000000	0.000000	0.005200	0.022000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
2,3,7,8 Tetrachlorodibenzo P Dioxin	1746016	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrolein	107028	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acrylonitrile	107131	0.000000	0.000000	0.000250	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzene	71432	0.000000	0.000000	0.051000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bromoform	75252	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Carbon Tetrachloride	56235	0.000000	0.000000	0.001600	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorobenzene	108907	0.000000	0.000000	21.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chlorodibromomethane	124481	0.000000	0.000000	0.013000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloroform	67663	0.000000	0.000000	0.470000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dichlorodibromomethane	75274	0.000000	0.000000	0.017000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloroethane	107062	0.000000	0.000000	0.037000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1-Dichloroethylene	75354	0.000000	0.000000	0.003200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichloropropane	78875	0.000000	0.000000	0.015000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichloropropene	542756	0.000000	0.000000	1.700000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Ethylbenzene	100414	0.000000	0.000000	29.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Methyl Bromide	74839	0.000000	0.000000	1.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

**STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 005**

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Methylene Chloride	75092	0.000000	0.000000	0.590000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,2,2-Tetrachloroethane	79345	0.000000	0.000000	0.004400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Tetrachloroethylene	127184	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Toluene	108883	0.000000	0.000000	200.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Trans-Dichloroethylene	156605	0.000000	0.000000	140.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,1,1-Trichloroethane	71556	0.000000	0.000000	12,722.948092	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
1,1,2-Trichloroethane	79005	0.000000	0.000000	0.016000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Trichloroethylene	79016	0.000000	0.000000	0.030000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Vinyl Chloride	75014	0.000000	0.000000	0.530000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chlorophenol	95578	0.000000	0.000000	0.150000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dichlorophenol	120832	0.000000	0.000000	0.290000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dimethylphenol	105679	0.000000	0.000000	0.850000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrophenol	51285	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pentachlorophenol	87865	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Phenol	108952	0.000000	0.000000	1,700.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4,6-Trichlorophenol	88062	0.000000	0.000000	0.002400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Acenaphthene	83329	0.000000	0.000000	0.990000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Anthracene	120127	0.000000	0.000000	40.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzidine	92875	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)anthracene	56553	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(a)pyrene	50328	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Benzo(k)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroisopropyl)ether	108601	0.000000	0.000000	65.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-ethylhexyl)phthalate	117817	0.000000	0.000000	0.002200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Butylbenzyl phthalate	85687	0.000000	0.000000	1.900000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-Chloronaphthalene	91587	0.000000	0.000000	1.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chrysene	218019	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dibenzo(a,h)anthracene	53703	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Dichlorobenzene	95501	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,3-Dichlorobenzene	541731	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,4-Dichlorobenzene	106467	0.000000	0.000000	2.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
3,3-Dichlorobenzidine	91941	0.000000	0.000000	0.000028	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Diethyl phthalate	84662	0.000000	0.000000	44.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dimethyl phthalate	131113	0.000000	0.000000	1,100.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Di-n-butyl phthalate	84742	0.000000	0.000000	4.500000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-Dinitrotoluene	121142	0.000000	0.000000	0.003400	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2-Diphenylhydrazine	122667	0.000000	0.000000	0.000200	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluoranthene	206440	0.000000	0.000000	0.140000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Fluorene	86737	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobenzene	118741	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorobutadiene	87683	0.000000	0.000000	0.018000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Hexachlorocyclopentadiene	77474	0.000000	0.000000	17.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 005

Parameter	CAS Number	Reported Discharge (mg/l)		Calculated Effluent Limitations (mg/l)		Reasonable Potential		Data Source	No. of Samples	Effluent Requirement		Justification	
		Average	Maximum	Average	Maximum	Average	Maximum			Average	Maximum	Average	Max
Hexachloroethane	67721	0.000000	0.000000	0.003300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Indeno(1,2,3-cd)pyrene	193395	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Isophorone	78591	0.000000	0.000000	0.960000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Nitrobenzene	98953	0.000000	0.000000	0.690000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodimethylamine	62759	0.000000	0.000000	0.003000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodi-n-Propylamine	621647	0.000000	0.000000	0.000510	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
N-Nitrosodiphenylamine	86306	0.000000	0.000000	0.006000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Pyrene	129000	0.000000	0.000000	4.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
1,2,4-Trichlorobenzene	120821	0.000000	0.000000	0.940000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Aldrin	309002	0.000000	0.000000	0.000000	0.003000	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
alpha-BHC	319846	0.000000	0.000000	0.000005	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Beta-BHC	319857	0.000000	0.000000	0.000017	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
gamma-BHC (Lindane)	58899	0.000000	0.000000	0.000063	0.000950	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Chlordane	57749	0.000000	0.000000	0.000001	0.002400	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDT	50293	0.000000	0.000000	0.000000	0.001100	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
4,4'-DDE	72559	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
4,4'-DDD	72548	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Dieldrin	60571	0.000000	0.000000	0.000000	0.000240	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Alpha-Endosulfan	959988	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Beta-Endosulfan	33213659	0.000000	0.000000	0.000056	0.000220	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endosulfan sulfate	1031078	0.000000	0.000000	0.089000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Endrin	72208	0.000000	0.000000	0.000036	0.000086	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Endrin aldehyde	7421934	0.000000	0.000000	0.000300	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Heptachlor	76448	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Heptachlor epoxide	1024573	0.000000	0.000000	0.000000	0.000520	0.00%	0.00%	No Data	0	None	None	HH Fish	Acute
Polychlorinated Biphenyls (PCBs)	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA	
Toxaphene	8001352	0.000000	0.000000	0.000000	0.000730	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
1,2,4,5-Tetrachlorobenzene	95943	0.000000	0.000000	0.001100	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2-methyl-4,6-dinitrophenol	534521	0.000000	0.000000	0.280000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
2,4-D	94757	0.000000	0.000000	21,022.192137	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-TP (Silvex)	93721	0.000000	0.000000	636.147405	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
2,4,5-trichlorophenol	95954	0.000000	0.000000	3.600000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Asbestos	1332214	0.000000	0.000000	2,102,219,213.74	NA	0.00%	0.00%	No Data	0	None	None	HH DWS	NA
Benzo(b)fluoranthene	205992	0.000000	0.000000	0.000018	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(2-chloroethyl)ether	111444	0.000000	0.000000	0.000530	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Bis(chloromethyl)ether	542881	0.000000	0.000000	0.000000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Chloropyrifos	2921882	0.000000	0.000000	0.000041	0.000083	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (III)	16065831	0.000000	0.000000	0.187293	3.918538	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Chromium (VI)	18540299	0.000000	0.000000	0.011000	0.016000	0.00%	0.00%	No Data	0	None	None	Chronic	Acute
Demeton	8065483	0.000000	0.000000	0.000100	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA
Dinitrophenols	25550587	0.000000	0.000000	5.300000	NA	0.00%	0.00%	No Data	0	None	None	HH Fish	NA
Guthion	86500	0.000000	0.000000	0.000010	NA	0.00%	0.00%	No Data	0	None	None	Chronic	NA

STEADY STATE TOXICS WASTELOAD ALLOCATION MODEL (SSTWAM2004) – REASONABLE POTENTIAL ANALYSIS – OUTFALL 005

# KPDES



## KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

# PERMIT

PERMIT NO.: KY0104566  
AI NO.: 923

### AUTHORIZATION TO DISCHARGE UNDER THE KENTUCKY POLLUTANT DISCHARGE ELIMINATION SYSTEM

Pursuant to Authority in KRS 224,

Kinder Morgan Terminals - Owensboro Gateway  
7550 Terminal Road  
Maceo, Kentucky 42355

is authorized to discharge from a facility located at

Kinder Morgan Terminals - Owensboro Gateway  
7550 Terminal Road  
Maceo, Daviess County, Kentucky

to receiving waters named

Outfall 001: The Ohio River at latitude/longitude, 37-46-37/87-04-21.

Outfalls 002, 005 and 006: Kelly Creek at latitude/longitude, 37-51-47/85-43-01, 37-50-35/87-02-05 and 37-50-41/87-02-01, respectively.

Outfalls 003 and 004: Unnamed tributary of Kelly Creek at latitude/longitude, 38-09-39/85-44-08 and 37-50-49/87-02-20, respectively.

in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, III and IV hereof. The permit consists of this cover sheet, Part I 5 pages, Part II 1 page, Part III 1 page, and Part IV 3 pages.

This permit shall become effective on

This permit and the authorization to discharge shall expire at midnight,

Date Signed

Sandra L. Gruzesky, Director  
Division of Water

## PART I A - EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: 001 - Storm water runoff.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)				MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Other Units (Specify)		Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids	N/A	N/A	30 mg/l	60 mg/l	1/Month	Grab
Oil & Grease	N/A	N/A	10 mg/l	15 mg/l	1/Month	Grab
Total Recoverable Iron	N/A	N/A	N/A	4.0	1/Month	Grab
Total Recoverable Aluminum (mg/l)	N/A	N/A	Report	Report	1/Month	Grab
Total Recoverable Manganese (mg/l)	N/A	N/A	Report	Report	1/Month	Grab
pH (standard units)	N/A	N/A	6.0 (min)	9.0 (max)	1/Month	Grab

The abbreviation N/A means Not Applicable.

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

## PART I A - EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfall serial number: 002 - Storm water runoff.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)				MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Other Units (Specify)		Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids	N/A	N/A	30 mg/l	60 mg/l	1/Month	Grab
Oil & Grease	N/A	N/A	10 mg/l	15 mg/l	1/Month	Grab
Chloride (mg/l)	N/A	N/A	N/A	1200	1/Month	Grab
Total Recoverable Iron	N/A	N/A	N/A	4.0	1/Month	Grab
Total Recoverable Aluminum (mg/l)	N/A	N/A	Report	Report	1/Month	Grab
Total Recoverable Manganese (mg/l)	N/A	N/A	Report	Report	1/Month	Grab
pH (standard units)	N/A	N/A	6.0 (min)	9.0 (max)	1/Month	Grab

The abbreviation N/A means Not Applicable.

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

## PART I A - EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfalls serial numbers: 003 and 004 - Storm water runoff.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)				MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Other Units (Specify)		Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids	N/A	N/A	30 mg/l	60 mg/l	1/Month	Grab
Oil & Grease	N/A	N/A	10 mg/l	15 mg/l	1/Month	Grab
pH (standard units)	N/A	N/A	6.0 (min)	9.0 (max)	1/Month	Grab

The abbreviation N/A means Not Applicable.

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

Outfall 004 is substantially identical to Outfall 003. Outfall 003 will be sampled in accordance with the monitoring requirements and the results will be reported for the substantially identical outfall.

## PART I A - EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the term of this permit, the permittee is authorized to discharge from Outfalls serial numbers: 005 and 006 - Storm water runoff.

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS (lbs/day)				MONITORING REQUIREMENTS	
	Monthly Avg.	Daily Max.	Other Units (Specify)		Measurement Frequency	Sample Type
Flow (MGD)	Report	Report	N/A	N/A	1/Month	Instantaneous
Total Suspended Solids	N/A	N/A	30 mg/l	60 mg/l	1/Month	Grab
Oil & Grease	N/A	N/A	10 mg/l	15 mg/l	1/Month	Grab
pH (standard units)	N/A	N/A	6.0 (min)	9.0 (max)	1/Month	Grab

The abbreviation N/A means Not Applicable.

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

Outfall 006 is substantially identical to Outfall 005. Outfall 005 will be sampled in accordance with the monitoring requirements and the results will be reported for the substantially identical outfall.

**PART I B - SCHEDULE OF COMPLIANCE**

The permittee shall achieve compliance with all requirements on the effective date of this permit.

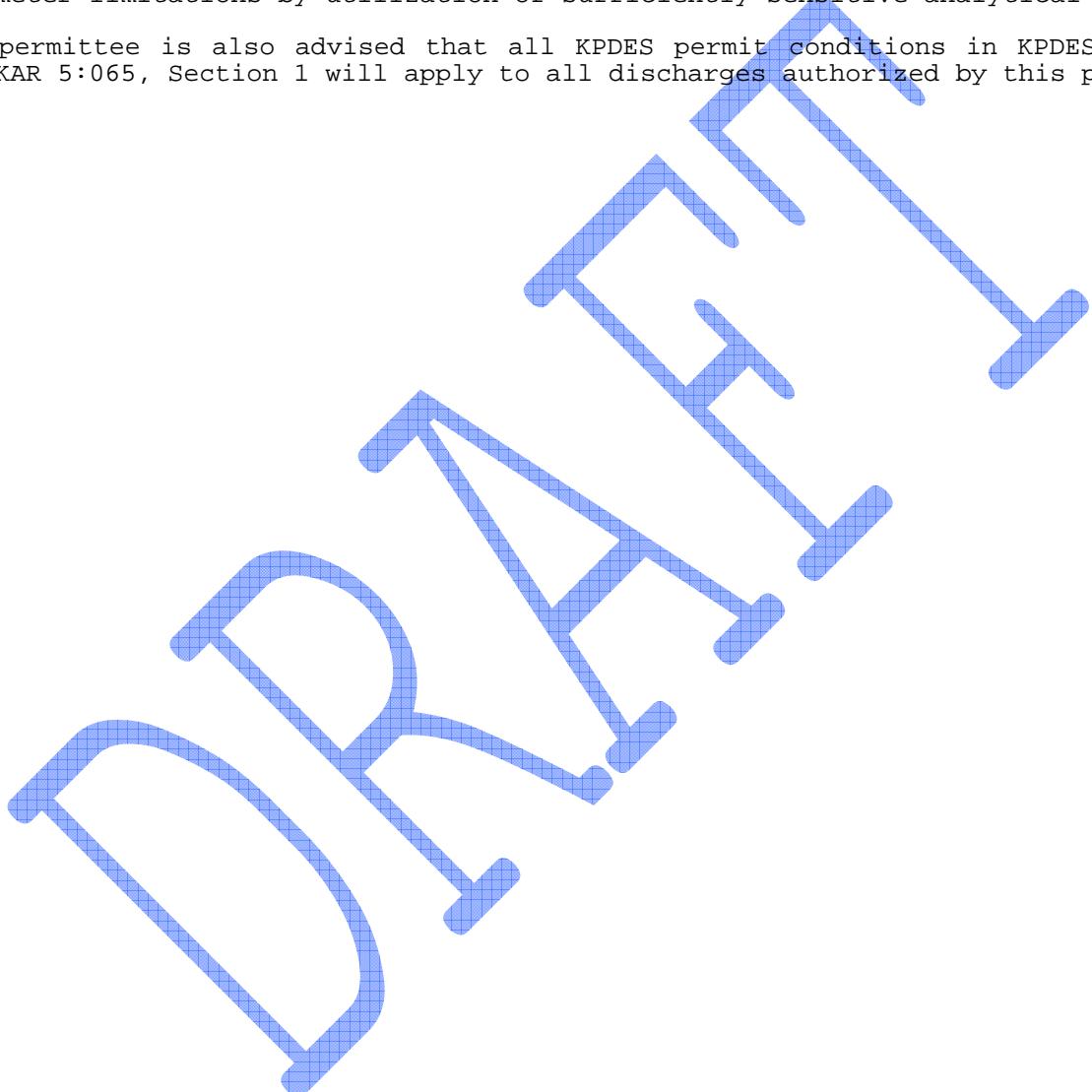


**PART II - STANDARD CONDITIONS FOR KPDES PERMIT**

This permit has been issued under the provisions of KRS Chapter 224 and regulations promulgated pursuant thereto. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits or licenses required by this Cabinet and other state, federal, and local agencies.

It is the responsibility of the permittee to demonstrate compliance with permit parameter limitations by utilization of sufficiently sensitive analytical methods.

The permittee is also advised that all KPDES permit conditions in KPDES Regulation 401 KAR 5:065, Section 1 will apply to all discharges authorized by this permit.



## PART III - OTHER REQUIREMENTS

### A. Reporting of Monitoring Results

Monitoring results obtained during each monitoring period must be reported on a preprinted Discharge Monitoring Report (DMR) Form that will be mailed to you. The completed DMR for each monitoring period must be sent to the Division of Water at the address listed below (with a copy to the appropriate Regional Office) postmarked no later than the 28th day of the month following the monitoring period for which monitoring results were obtained.

Division of Water  
Madisonville Regional Office  
Madisonville State Office Bldg.  
625 Hospital Drive  
Madisonville, Kentucky 42431-1683  
ATTN: Supervisor

Energy and Environment Cabinet  
Dept. for Environmental Protection  
Division of Water/Surface Water Permits  
Branch  
200 Fair Oaks Lane  
Frankfort, Kentucky 40601

### B. Reopener Clause

This permit shall be modified, or alternatively revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under 401 KAR 5:050 through 5:086, if the effluent standard or limitation so issued or approved:

1. Contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
2. Controls any pollutant not limited in the permit.

The permit as modified or reissued under this paragraph shall also contain any other requirements of KRS Chapter 224 when applicable.

### C. Outfall Signage

The permittee shall post a permanent marker at all discharge locations and/or monitoring points. The marker shall be of sufficient size to display the Permittee Name, KPDES permit and outfall numbers and shall be prominently displayed. For internal monitoring points the marker shall be of sufficient size to include the outfall number and is to be posted as near as possible to the actual sampling location.

## PART IV - BEST MANAGEMENT PRACTICES

### SECTION A. GENERAL CONDITIONS

#### 1. Applicability

These conditions apply to all permittees who use, manufacture, store, handle, or discharge any pollutant listed as: (1) toxic under Section 307(a)(1) of the Clean Water Act; (2) oil, as defined in Section 311(a)(1) of the Act; (3) any pollutant listed as hazardous under Section 311 of the Act; or (4) is defined as a pollutant pursuant to KRS 224.01-010(35) and who have ancillary manufacturing operations which could result in (1) the release of a hazardous substance, pollutant, or contaminant, or (2) an environmental emergency, as defined in KRS 224.01-400, as amended, or any regulation promulgated thereto (hereinafter, the "BMP pollutants"). These operations include material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas.

#### 2. BMP Plan

The permittee shall develop and implement a Best Management Practices (BMP) plan consistent with 401 KAR 5:065, Section 2(4) pursuant to KRS 224.70-110, which prevents or minimizes the potential for the release of "BMP pollutants" from ancillary activities through plant site runoff; spillage or leaks, sludge or waste disposal; or drainage from raw material storage. A Best Management Practices (BMP) plan will be prepared by the permittee unless the permittee can demonstrate through the submission of a BMP outline that the elements and intent of the BMP have been fulfilled through the use of existing plans such as the Spill Prevention Control and Countermeasure (SPCC) plans, contingency plans, and other applicable documents.

#### 3. Implementation

If this is the first time for the BMP requirement, then the plan shall be developed and submitted to the Division of Water within 90 days of the effective date of the permit. Implementation shall be within 180 days of that submission.

For permit renewals, the plan in effect at the time of permit reissuance shall remain in effect. Modifications to the plan as a result of ineffectiveness or plan changes to the facility shall be submitted to the Division of Water and implemented as soon as possible.

#### 4. General Requirements

The BMP plan shall:

- a. Be documented in narrative form, and shall include any necessary plot plans, drawings, or maps.
- b. Establish specific objectives for the control of toxic and hazardous pollutants.
  - (1) Each facility component or system shall be examined for its potential for causing a release of "BMP pollutants" due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

- (2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances which could result in a release of "BMP pollutants," the plan should include a prediction of the direction, rate of flow, and total quantity of the pollutants which could be released from the facility as result of each condition or circumstance.
- c. Establish specific Best Management Practices to meet the objectives identified under paragraph b of this section, addressing each component or system capable of causing a release of "BMP pollutants."
- d. Include any special conditions established in part b of this section.
- e. Be reviewed by plant engineering staff and the plant manager.

**5. Specific Requirements**

The plan shall be consistent with the general guidance contained in the publication entitled "NPDES Best Management Practices Guidance Document," and shall include the following baseline BMPs as a minimum.

- a. BMP Committee
- b. Reporting of BMP Incidents
- c. Risk Identification and Assessment
- d. Employee Training
- e. Inspections and Records
- f. Preventive Maintenance
- g. Good Housekeeping
- h. Materials Compatibility
- i. Security
- j. Materials Inventory

**6. SPCC Plans**

The BMP plan may reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under Section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP plan by reference.

**7. Hazardous Waste Management**

The permittee shall assure the proper management of solid and hazardous waste in accordance with the regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1978 (RCRA) (40 U.S.C. 6901 et seq.). Management practices required under RCRA regulations shall be referenced in the BMP plan.

**8. Documentation**

The permittee shall maintain a description of the BMP plan at the facility and shall make the plan available upon request to NREPC personnel. Initial copies and modifications thereof shall be sent to the following addresses when required by Section 3:

Division of Water  
Madisonville Regional Office  
Madisonville State Office Bldg.  
625 Hospital Drive  
Madisonville, Kentucky 42431-1683  
ATTN: Supervisor

Energy and Environment Cabinet  
Dept. for Environmental Protection  
Division of Water/Surface Water Permits  
Branch  
200 Fair Oaks Lane  
Frankfort, Kentucky 40601

9. **BMP Plan Modification**

The permittee shall amend the BMP plan whenever there is a change in the facility or change in the operation of the facility which materially increases the potential for the ancillary activities to result in the release of "BMP pollutants."

10. **Modification for Ineffectiveness**

If the BMP plan proves to be ineffective in achieving the general objective of preventing the release of "BMP pollutants," then the specific objectives and requirements under paragraphs b and c of Section 4, the permit, and/or the BMP plan shall be subject to modification to incorporate revised BMP requirements. If at any time following the issuance of this permit the BMP plan is found to be inadequate pursuant to a state or federal site inspection or plan review, the plan shall be modified to incorporate such changes necessary to resolve the concerns.

**SECTION B. SPECIFIC CONDITIONS**

**Periodically Discharged Wastewaters Not Specifically Covered By Effluent Conditions**

The permittee shall include in this BMP plan procedures and controls necessary for the handling of periodically discharged wastewaters such as intake screen backwash, meter calibration, fire protection, hydrostatic testing water, water associated with demolition projects, etc.